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THE PSYCHIC FACTOR IN CARDIAC DISORDERS *

LEWIS A. CONNER, M.D.
NEW YORK

There are several impelling reasons for the selection of this topic for my contribution to this series of talks on subjects of special interest to the practitioner. These may be stated briefly as: first, the great prevalence of disorders of the heart having as their chief or only determining cause some purely emotional disturbance; second, the frequency with which such psychic disturbances are the result of some injudicious statement or action on the part of a physician—be he family practitioner, specialist or life insurance examiner; third, the fact that emotional reactions may play a very important part in the clinical picture presented by patients who have unmistakable evidences of organic heart disease, and, finally, the necessity, on the part of the practitioner, of a full and sympathetic understanding of these psychic factors if treatment is to be successful.

It need hardly be explained, I am sure, that in this discussion of the interplay of reactions between the heart and the mind I speak entirely from the standpoint of an internist whose education has included no formal training in psychology or psychiatry and whose scanty knowledge of these subjects has been gained painfully in the hard school of experience. But these deficiencies are shared, I believe, by most of my audience and perhaps we may understand each other the better for this common bond of ignorance.

In its broader implications the title of this address should include not only a consideration of the influence of the mind in the production and maintenance of disorders of the heart but conversely the influence of disease of the heart in the production of mental disorders. In the following discussion, however, I shall not attempt to include those frank psychoses, of exhaustive or toxic nature, which are occasionally seen as the accompaniments of the graver forms of organic heart disease, nor will I do more than mention here the interesting fact that women who, from childhood, have had a well compensated grade of mitral stenosis show usually not only distinct physical characteristics (undersize, delicate bony and muscular structure, poor fat panniculus) but also certain peculiarities in mental make-up, as seen especially in their great emotional instability.

We are all familiar with the fact that the emotions have a direct influence on those bodily functions which are controlled by the vegetative nervous system and whose workings normally proceed without participation of the conscious mind. One has but to recall their influence on the secretory functions, as exemplified in the flow of saliva and gastric juice called forth by the mere sight of appetizing food; their effect on the musculature of the gastro-intestinal tract, as shown by the vomiting excited by some revolting sight and by the diarrhea caused by fright or anxiety; their influence on the walls of the arteries as displayed in the flushing of embarrassment and the blanching of fear and anger. The rare but well authenticated instances of jaundice following some violent emotion are to be explained probably as the result of spastic closure of the sphincter of Oddi. Finally, the influence of the mind on the action of the heart is shown by the tachycardia, the palpitation, the premature beats and the precordial discomfort produced by sudden fright or violent anger. For a full realization of the far-reaching influences of the emotions on the bodily functions, one should read Cannon's illuminating book "Bodily Changes in Pain, Hunger, Fear and Rage."

This influence of the emotions on the visceral functions is, obviously, exerted through the medium of the autonomic nervous system, since these organs are innervated only by that system; but the effects may be produced either by the direct action of the vegetative system on the respective organs or indirectly by its effect on the glands of internal secretion, such as the suprarenals.

In approaching the subject of the psychic factor in cardiac disorders, it will be convenient to consider this factor first in relation to cardiac neuroses and later in connection with organic disease of the heart.

THE PSYCHIC FACTOR IN CARDIAC NEUROSES

I shall not attempt a classification of the conditions commonly known as neuroses, but it may be helpful to distinguish between those disorders in which the symptoms are chiefly or wholly those of disturbed states of mind—the psychoneuroses—made up of morbid fears, apprehensions, anxieties, indecisions and depressions, and those in which the symptoms are due to disturbance of the functions of one or more of the internal organs—the so-called organ neuroses or the vegetative neuroses. In the one case the victim may have a distressing fear of, say, heart disease without any actual symptoms referable to that organ. In the other he may have obvious symptoms and signs of disturbance of the cardiac functions without, for a time at least, any conscious apprehension or fear. When, however, the disorder has existed for some time it is usual to find both types of symptoms present and operating as a vicious circle, every appearance of a

* Read before the New York Academy of Medicine, Dec. 6, 1929, in the series of lectures devoted to subjects of special interest to the practitioner.

cardiac symptom serving to increase the mental agitation and this in turn increasing the tendency to cardiac symptoms.

The psychic reaction to doubt concerning the integrity of the heart seems to be much more violent and profound than is the case with any of the other internal organs. Most persons who would accept with considerable equanimity the knowledge that they had some disease of the liver or kidneys or lungs will have their morale sadly shaken by any evidence that the heart is not functioning properly. In the minds of most laymen the thought of heart disease is still associated with the idea of sudden and unforeseen death. This is perhaps the reason why the cardiac neuroses occupy such a prominent and important place in the list of organ neuroses.

For the normal functioning of the organs under the control of the vegetative nervous system there is maintained a fine balance between the accelerator and the inhibitory mechanism by which such functions are carried on without participation of the conscious mind. But all these functions are none the less, to some degree, susceptible to psychic influence. Transient disturbances of this equilibrium occur, as has been pointed out, in normal individuals as a reaction to sudden psychic stimulation. In the "neurotic" individual this response on the part of the vegetative nervous system seems grossly exaggerated and out of all proportion, in its severity or in its duration, to the psychogenic stimulus. We are apt to think of such excessive reactions in terms of a "hypersensitive autonomic system" or of "autonomic imbalance." The question may be raised, however, in most such instances, whether the fault does not lie in a psychogenic stimulus which is excessive or unduly protracted rather than in an abnormally sensitive autonomic system.

If one accepts the premise of a psychogenic basis for all the cardiac neuroses in which toxic or infectious causes may be excluded, then it must be admitted that such a psychic origin is sometimes so obscure and so deeply buried as at times to defy the most thorough search and questioning. The stimulus may lie in some long past experience which has disappeared from the conscious mind and has sunk into the subcortical, automatic zone, where it remains only as an "organ memory." Nevertheless it may be stated with some confidence that the frequency with which a psychic cause is established will vary directly with the thoroughness and skill with which it is sought.

But even though a careful search may fail to reveal a direct and obvious relationship between the cardiac symptoms and some definite psychic disturbance, it will rarely fail to disclose evidences of some instability of the nervous system as it relates either to the mind or to the autonomic mechanism. It is surprising, in reviewing the history of patients with functional heart disturbances, to find how frequently one gets the story of some "nervous breakdown," either during the years of school or college life or in the course of some later period of stress. In other patients without such a definite breakdown there will be indications of mental instability becoming apparent in the form of exaggerated introspection, of great suggestibility, of morbid concern for health. In still others there will be a history of other organ neuroses or clinical evidences of a disturbed autonomic nervous mechanism such as instability of vasomotor control, extreme lability of the pulse rate or blood pressure level, or marked sinus arrhythmia.

When the psychogenic stimulus can be determined, it will usually be found to fall into one of the following four groups of causes:

1. The statement of some physician or life insurance examiner that the heart shows some abnormality such as a murmur or irregularity of rhythm; or else the rejection of the applicant for life insurance on the score of some heart disturbance or of "high blood pressure." Sometimes it is a mere assumption on the part of the applicant himself that the heart must be diseased because two or three examiners were called in to listen to it. In a person of the appropriate mental composition, the slightest suggestion that the heart is not intact may be enough to start a whole train of emotional reactions leading up to cardiac symptoms.

2. The occurrence of some dramatic case of heart disease (perhaps with sudden death) among the relatives or friends of the patient.

3. The appearance of some symptom which calls the attention of the patient to his heart and leads to a doubt as to its integrity. This may be a sudden skip, a flutter or a twinge of pain, or may be merely what is regarded as undue palpitation or dyspnea after some special exertion. Such disturbing symptoms are often first noticed during convalescence from an illness, such as an attack of grip, or they may appear as a result of the excessive use of tobacco or coffee.

4. Some profound and protracted emotional disturbance, such as deep grief or prolonged anxiety, in which, however, there is at first no element of doubt concerning the state of the heart. Much the most striking illustrations of the operation of this cause were seen during the war in the innumerable instances of that condition known variously as the irritable heart of soldiers, the effort syndrome or neurocirculatory asthenia. As the result of the profound and long continued emotional disturbances incident to the process of volunteering or of being drafted into the army, such cases were encountered literally by the thousand and far outnumbered all the cases of organic heart disease found by the examining boards.

A few illustrations may serve to emphasize the variety of these emotional causes:

A man, aged 22, a clerk, seen in September, 1925, complained of shooting pains in the precordial region, some shortness of breath, and insomnia. He had never had any serious illness. While in high school he had been very athletic and had had no symptoms. In 1922 an insurance examiner told him that he had a heart murmur and should consult his physician. This physician confirmed the finding and treated him by limiting his exercise, putting him on a diet and cautioning him against overexertion. Up to that time he had felt perfectly well. Soon after this he began to have pains in the left side of the chest and at times a feeling of breathlessness. He grew very apprehensive, lost interest in everything except his condition, had various nervous symptoms, and could not sleep. This state of things had continued for three years, during much of which time he had been unable to work. A careful physical examination revealed no abnormalities whatever except a systolic murmur heard chiefly over the pulmonic area and having the usual features of an accidental murmur. The process of restoring his confidence and his self-control was a slow and tedious one and it was three years more before he had entirely regained his health.

An active and highly intelligent woman, aged 50, a widow, was much distressed by frequent nocturnal attacks in which she would be awakened by violent palpitation and rapid heart action accompanied by flatulence and belching. The attacks would last an hour or two and were so alarming that she usually was compelled to send for a physician. These attacks had occurred at irregular intervals during the preceding

eighteen months. She had lost much weight because she feared to eat and she often stayed awake all night because of the dread of an attack if she should fall asleep. She had never had an attack during the day or during her waking hours at night. What was more surprising was the fact that the attacks occurred only when she was occupying her house in the country and never when she was in her apartment in the city. Physical examination did not reveal anything abnormal except for an occasional premature beat, and as it seemed important to learn more of the true nature of the attacks a nurse was supplied who was to be with her at night. During the period that the nurse was in attendance, however, she was free from the nocturnal symptoms. Then the fact was disclosed that a few months before the symptoms first appeared her husband had died during the night in a sudden heart seizure and, as their country house was some distance from the nearest village, she had been unable to get a physician until after he was dead. She acknowledged that this experience was constantly in her mind when she was living in the country and it was not difficult to make her see the relationship between this state of mind and her nocturnal symptoms, which usually seemed to follow a nightmare. Soon after that the attacks ceased entirely.

The wife of a physician, aged 35, complained of frequent attacks of irregular heart action and palpitation, with an increasing degree of breathlessness on exertion. She had never had any illness except occasional attacks of tonsillitis as a child, but had always been rather apprehensive and easily disturbed nervously. About two and a half years before, during a period of great mental stress, she noticed that her heart would sometimes pound and seem to skip a beat. In spite of reassurance concerning her heart these symptoms returned from time to time and she grew increasingly apprehensive lest she have some serious heart disease. Palpitation and irregularity became more and more frequent; she found that any exercise, such as dancing, which she had formerly enjoyed, would cause breathlessness and fatigue, and for a year she had been unable to look after her household and her children and had lived the life of an invalid. The examination gave no indication of any abnormality of the heart or other organ and, under reassurance and encouragement, together with graduated exercises, the trouble slowly subsided and eventually disappeared.

SYMPTOMS OF THE CARDIAC NEUROSES

Symptoms of the cardiac neuroses are predominantly of a subjective character, as is the case in most other forms of organ neurosis. Such subjective symptoms include every possible variety of sensation from that of a slight fulness, soreness or "pressure" up to severe anginal pain with its characteristic localization and its radiation to the arm, neck or back. Frequently the sensation relates to the heart beat and is described as fluttering, palpitation, pounding, or throbbing in the ears or temples. A common form of unpleasant sensation is the single thump that follows a premature beat. Occasionally the complaint is of a sensation as though the heart were not beating. Another common symptom is the feeling of breathlessness, or of inability to take a satisfactory breath, without any actual dyspnea even on exertion. All these subjective symptoms can of course be duplicated in organic disease of the heart, as well as in those functional disorders of toxic or infectious nature which cannot be classed among the neuroses in the stricter meaning of that term.

Pain.—When actual pain is present, its careful analysis will usually show evident differences from true anginal pain. Rarely is it referred directly to the retrosternal region. Usually its location is in the apical region or over the left half of the precordium. Usually, too, it is made up of twinges of darting pain, and the steady, boring, constricting character of anginal pain is lacking. There is seldom any close relationship between the pain and physical effort. Indeed, the pain is much more apt to be felt when the patient is sitting quietly or is in bed than when walking. But although the pain of the neuroses is ordinarily easily distinguishable from that seen in serious organic disease, it is by no means always so, and it cannot of itself be relied on to make the differential diagnosis between a neurosis and disease of the coronary vessels. At times it may have all the characteristic features of true anginal pain and the recognition of its real nature must rest entirely on the other factors present. Such cases have long been recognized, of course, under the names of pseudo-angina or vasomotor angina and they often present diagnostic problems of extreme difficulty.

As an illustration of such difficulties in diagnosis the following case may be cited:

A man, aged 48, seen in 1928 because of frequent attacks of anginal pain, stated that he had had his first attack of pain in 1922 at a time when he was much fatigued and under a good deal of mental strain. In that attack the pain began as a severe ache, felt at the lower part of the sternum and later radiating down both arms to the elbows. The discomfort lasted six or eight hours. He was seen by an able internist, who associated it with an attack of influenza in 1918 and put the patient to bed for several weeks. After that there was no further illness until the spring of 1928 (an interval of six years), when during another period of strain and worry he became faint and dizzy, noted that his heart was beating rapidly, and felt "hysterical." The rapid heart action lasted some hours and he was put to bed for several days. After an interval of three months he was awakened by another attack of retrosternal pain which radiated to his right shoulder and arm. Since that time he had had frequent similar attacks, coming on at different times of the day and varying greatly in severity and duration. The pain was felt sometimes while walking, frequently after eating, and occasionally at night. It usually began behind the sternum and radiated to the right arm, but occasionally it was felt first in the elbow. With the pain there was a feeling of constriction and weight and during severe attacks some shortness of breath.

Examination of the heart yielded normal observations except for an occasional premature beat. The orthodiagram showed a rather small, vertical heart and a normal arch shadow. The radial arteries were slightly thickened, the pulse rate was slow, and marked vasomotor instability was shown by the intermittent flushing of the face and neck. The electrocardiogram gave a normal tracing except for the occasional ventricular premature beats.

The patient himself was evidently a nervous, highly sensitive man who felt the weight of his rather heavy business and family responsibilities, but no obvious psychic relationship to his disorder was disclosed.

Although there were many factors that suggested that the trouble did not have a structural basis, the character of the attacks of pain was such as to make one hesitate to ascribe the disorder wholly to emotional disturbances. The patient was later placed in the hands of a skilful psychiatrist, who became convinced that the trouble was purely an anxiety neurosis and was able to make various helpful readjustments in the patient's life. For the past year he has been entirely free from his old symptoms and has lived a normal, active life. As it is now more than eight years since his first attack of pain, the psychogenic nature of the trouble seems established.

Objective Symptoms.—A change in the heart rate is much the commonest of these symptoms. Such a change is almost always in the direction of acceleration, and tachycardia in response to any emotional disturbance is especially characteristic. Nevertheless a pronounced slowing of the heart rate as the result of profound emotion does undoubtedly occur. With the tachycardia there is often violent heart action with throbbing of the whole precordium, such as occurs normally in fright or anger. Premature beats of the

ventricular type are frequently encountered even when the influence of such toxic agents as tobacco and coffee can be excluded. Evidences of excessive vasomotor lability are present in most patients in the form of ready flushing in response to even slight emotional changes.

In the special type of neurosis known as the irritable heart of soldiers many of the symptoms already mentioned, both subjective and objective, are joined with certain other symptoms to form a striking and characteristic syndrome. Tachycardia, palpitation, throbbing arteries, precordial pain, fatigue and dyspnea on slight exertion, tremor, sweating and clammy, cyanotic hands combine to make a clinical picture which, once seen, can never be forgotten.

THE PSYCHIC FACTOR IN ORGANIC HEART DISEASE

It is not to be supposed that organic heart disease is found only in individuals with a stable mind and nervous system; and when it appears in persons whose mental make-up predisposes them to apprehensions and fears, one may expect to find evidences of this tendency in the appearance of symptoms which cannot reasonably be ascribed to the organic disease present. In such cases one may be confronted with a wide range of symptoms, chiefly subjective, which lie outside the legitimate manifestations of the existing organic disease. When the structural disease is itself causing severe or distressing symptoms the neurotic symptoms, if present at all, are apt to be relatively unimportant. It is in the milder forms of heart disease, with few or no real symptoms, that the emotional reactions tend to occupy the foreground of the picture and demand serious consideration. On their proper evaluation by the physician may rest the entire structure of successful treatment. This differentiation between the symptoms which are the legitimate result of the existing organic disease and those which are merely the expression of the associated psychic upheaval demands the utmost in skill, judgment and experience on the part of the physician. He must know from experience just what is to be expected in the way of symptoms from the type and grade of the organic lesions present in order to recognize that certain of the symptoms have no direct relation to the somatic disease.

This association of organic disease with symptoms of a purely neurotic nature is encountered in patients of almost all ages. One sees it in older children with rheumatic heart disease who have been taught, usually by an overanxious mother, that all physical effort is to be avoided; it is found frequently in neurotic women with long-standing but relatively mild mitral stenosis, and it is by no means uncommon in persons in middle life who are oppressed by the knowledge that they suffer from "high blood pressure." A single instance will serve to illustrate this association:

A married woman, aged 36, while on a visit to the city had a sudden attack of faintness and weakness so severe as to require the immediate services of a physician. The symptoms continued for two days and were accompanied by great mental agitation and by the constant fear that she was about to die. The physician in attendance recognized that she had a valvular lesion but could find no satisfactory explanation for her sudden and alarming symptoms. She was seen in consultation on the second day because of the persistence of these symptoms. She presented the characteristic signs of mitral stenosis, but the heart was only slightly enlarged, its action was regular and not unduly rapid, and there was complete absence of all the usual signs of disturbed compensation. From her husband it was learned that for many years she had known that she had a "heart murmur," but she had always been very athletic and had played tennis and taken other active exercise without any discomfort whatever. There had been no symptoms at the time of the birth of her two children. During the preceding year or two, however, she had had a number of attacks similar to the present one, always accompanied by great psychic disturbance and by the fear of death. Between the attacks she had been perfectly well. These attacks, her husband believed, were the result of anxiety concerning her heart trouble, as during this time her home physician had reminded her frequently that she had heart trouble and should be cautious about exerting herself. It required much persuasion and reassurance to induce the patient to leave her bed and return to her home, but the trip was made without difficulty and at last accounts she was leading her normal, active life and had regained some of her lost confidence.

What has been said thus far concerning the psychic factor in organic disease of the heart has related to the appearance of neurotic symptoms as the result of anxiety caused by a knowledge of the existence of heart disease. I will now call attention to the part which profound and protracted emotional disturbances may sometimes play in aggravating the existing heart damage and in producing serious cardiac symptoms. Physicians are much too prone to regard physical overexertion as the most serious hazard to which cardiac patients are exposed and to fail to give proper weight to the potentialities for harm that reside in violent psychic stimuli.

The following dramatic case history will illustrate this danger better than any description I can give:

A man, aged 45, a painter by trade, was brought to the New York Hospital by ambulance, Oct. 7, 1929, with every evidence of grave heart disease. While riding in a street car he had had a sudden attack of severe dyspnea with thoracic pain and oppression and had fainted. On arrival at the hospital he was still dyspneic and cyanotic and was raising frothy, bloody sputum. Physical examination showed a greatly enlarged heart, with all the cardiac and vascular signs of a severe grade of aortic insufficiency with failure of compensation. The heart was beating regularly and at a rate of 44 to the minute and an electrocardiogram showed complete heart block. When the patient had improved sufficiently to give a detailed history of his trouble, it was learned that at the age of 18 he had had gonorrhea and about the same time some arthritic symptoms which were ascribed to the venereal infection. He had had a mild painter's colic in 1916 and influenza in 1918. Apart from this he had always been well. About seven years before, during an examination for life insurance, he had been told that he had a "leaking valve," but this had given him no symptoms whatever and he had continued at his trade and had been perfectly well until Aug. 25, 1929, when he had had a sudden attack of dyspnea and precordial pain. This abrupt onset of symptoms in one who had evidently had a valvular lesion for many years led to further questioning, in the course of which the following tragic story was brought to light: His wife had died in 1916 and since that time he had centered his affections on his son, who had become very close and dear to him. August 15, the boy had been killed in an automobile accident. Following the death of his son the patient became melancholy and morose. On the evening of August 25, while brooding over his loss, he had had the sudden attack of dyspnea described. Following this there were frequent attacks of dyspnea at night, but during the day while he was busy at his work he felt pretty well. October 7, while riding in the car and thinking of his son, he had the severe attack which brought him to the hospital. As he improved slowly, his heart resumed a sinus rhythm but the auriculoventricular conduction time remained extremely long (0.64 second). In view of the finding of a heart murmur seven years before, of the absence of stigmas of syphilis and of a negative Wassermann reaction in both the blood and the spinal fluid, it seemed probable that the aortic insufficiency was of rheumatic origin. Whether the

heart block was of long standing or whether it was the result of vagus stimulation as a part of the patient's profound emotional reactions, it is impossible to say.

TREATMENT

It is in connection with the treatment of the psychic aspects of cardiac disorders that one feels most keenly one's deficiencies in psychiatric training. Then it is that one must bring to bear on the problem all that has been gathered of experience and sympathetic insight into the obscure and tangled processes of the human mind. At times it is much easier to recognize the importance of these psychic factors than to know how best to deal with them.

In many instances the problem is simple and a tactful explanation of the situation and reassurance may be all that is needed. At other times the therapeutic problem is difficult and complicated and clearly calls for the assistance of a trained and experienced psychiatrist. Generally, however, it falls to the lot of the family physician to deal with such patients, and if he has had the insight to recognize the significance of the emotional factor he will usually be found to possess the judgment and good sense necessary to effect the cure. Tact and common sense will go far toward compensating for the lack of psychiatric technic.

A word should be said first concerning prophylaxis. Obviously the fundamental difficulty in a patient with a cardiac neurosis lies in his personality and his mental composition, and those ingrained characteristics one can hardly hope to alter materially. But this fact makes it all the most important that as physicians we exercise great care to avoid supplying such an unstable individual with any suggestion that may serve to crystallize his fluid anxieties and center them on his heart.

If in the course of health or insurance examinations some unimportant cardiac anomaly is noted by the examiner, it is often wise to avoid mention of it; or, if it seems necessary to apprise the patient of it, the matter should be presented to him in such a way that it will carry with it reassurance and will put his mind at rest concerning its significance. Often it is necessary also to caution the anxious parents of children with the milder forms of heart disease concerning the harmful effects of too constant reminders to the child that his heart is crippled and that he is not like other children. Such an attitude may well lead to psychic scars more serious and disabling than those of the heart valves.

Coming now to the matter of treatment, usually the first problem to be faced is that of acquainting the patient with the fact that his symptoms are due to emotional causes rather than to disease of the heart itself. One might expect that such knowledge would come to him as a great relief, and frequently this is the case. But by many patients the intimation that the heart is normal and that the symptoms have a psychic origin is interpreted as meaning that the symptoms are "imaginary," and the first reaction to such a disclosure is apt to be one of strong resentment. Such a reaction must be prevented at any cost, for, if it occurs, one's usefulness with that patient is ended. In no other condition perhaps is complete faith in the judgment and wisdom of the physician so essential to success in treatment. The patient's understanding of the true character of his complaint must not be gained at the expense of his self-respect. If the necessary time and trouble are taken, it is usually not difficult to convince the patient that one realizes that his pain, palpitation and dyspnea are no less real and disturbing because they are brought about by agencies outside the heart itself, the really important difference being only that in his case the symptoms are curable whereas if they were the result of organic heart disease they might not be. Such a discussion should of course be preceded by a thorough and complete physical examination. Often it is wise to supplement this by instrumental examinations as well in order that, when the statement is made that the heart is not diseased, it may be backed up by as powerful an array of facts as possible. The casual announcement after a hasty and superficial examination that "there is nothing the matter with the heart" will almost certainly fail to carry conviction.

If the patient can be persuaded to accept without resentment the idea that his symptoms are of "nervous" origin, the battle is half won. From that point on the treatment consists chiefly in the liberal application of the two most generally effective remedies in the physician's armamentarium—reassurance and encouragement. Chiefly on their skilful use will depend the promptness and completeness of the recovery. But the reassurance must not be simply that of the spoken word. The patient must be shown how to reassure himself by a demonstration that his cardiac symptoms are made better rather than worse by the exercise and effort which hitherto he may have feared to undertake. To assure a patient that his heart is normal and at the same time to impose various restrictions as to its use is a contradiction which he will be the first to recognize.

Exercise of some form is usually an essential part of treatment. It serves the double purpose of demonstrating to the patient that his heart is capable of much more than he supposed and of rendering the heart less irritable and less ready to respond to the psychic stimuli. The form of exercise to be selected will depend on the special requirements and circumstances of the individual patient. In one case it may be some outdoor sport, such as golf or even tennis, which combines recreation with muscular development. In another it may be graded room-exercises or gymnasium work under the supervision of a trainer. Whatever the type of exercise selected, it must be carried out regularly and persistently and must of course be graduated carefully to suit the capacity of the patient.

As for the use of drugs, it is my judgment that they should be avoided unless there is a clear and imperative reason for their administration. The encouraging effect on the patient of being told that he does not need medicine usually far outweighs any transient benefit that may be gained from its use. If at the outset it seems important to utilize the sedative action of such drugs as phenobarbital and the bromides, these should be discontinued just as soon as the urgent need for them has passed. As for drugs such as digitalis and quinidine, which are known to be used for their effects on the heart, they can do nothing but harm. No intelligent patient can possibly be persuaded that his heart is sound when at the same time he is asked to take digitalis.

In deciding on the advisability of such measures as rest in bed, baths and massage, the guiding principle should be the probable effect of such procedures on the mind of the patient. The chief objection to them is that they so often serve as a constant reminder to him that he is not well, and this mental effect may nullify any physical benefit that might otherwise be derived from them. Much the same may be said concerning the interdiction of tobacco and coffee. Whenever it is known that the use of either of these substances is excessive and is contributing to the neurotic symptoms,

they should of course be forbidden; but when there is no reason to think that the smoking or the coffee drinking plays any part in the production of the symptoms it is usually wise to permit the continuance of the habit so long as it can be kept within bounds. Every liberty of this sort that can safely be given will have the effect on the patient of encouraging him and of persuading him that he cannot be seriously ill.

From what has been said concerning treatment it must be apparent that, in my judgment at least, the management of patients with cardiac neuroses belongs essentially to the realm of psychotherapy. The details of such treatment will of course vary with the character of the individual patient and with the predilections of the physician. If the latter will but keep in mind the psychic basis of the neurotic symptoms and the need of treating the mind of his patient rather than the symptoms themselves, and if he can call to his aid a modicum of tact, common sense and optimism, he is likely to be rewarded by results quite as brilliant and as satisfying as are ever obtained in any field of internal medicine.

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THE NONSPECIFIC TREATMENT OF NEUROSYPHILIS

FIFTH ANNUAL REPORT *

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In this report we review the status of a group of patients with neurosyphilis who were given fever therapy and who have now been under observation from three to five years. We will include, also, further observations on a smaller group of patients who were treated with nonspecific typhoid vaccine and who have been observed for two years.

Of the 213 patients treated between June, 1924, and June, 1926, 179 are available for this study. The remaining thirty-four have not been heard from for more than two years. One hundred of these patients, at the time they were inoculated with *Plasmodium vivax*, according to the suggestions of Wagner-Jauregg,[1] had the early signs of paresis, although in a few the disease had progressed far enough to require institutional care. The majority had been under treatment for parenchymatous neurosyphilis for several years, long enough for the observation that the advance in the clinical signs and the absence of serologic response indicated the development of paresis. In all the cases there were varying degrees of personality changes, loss of memory, tremors and objective neurologic changes. None, however, were of the advanced or vegetating type of paresis.

Of the 100 patients, the condition of thirty-eight is still in complete remission; thirty-one have been improved by some method of treatment; seventeen did not derive any benefit or were made worse, and fourteen are dead. Table 1 shows the annual clinical status of the patients with paresis treated during the last five years. There are five patients of the original group of fifty-seven who were in remission last year and are now regarded as "improved." They have shown slow but steady mental deterioration during the last two years and have had difficulty in maintaining their positions. They are not troublesome and have fair insight but poor coordination and lack of initiative. In previous reports attention has been called to the criteria that we maintained in the estimation of clinical remissions, basing the deductions solely on the economic status of the patient as a result of the fever therapy. Even though a patient derived material improvement, if he was unable to support himself or his family he was not graded as in remission. Of the fourteen patients reported as being dead, five died directly as a result of the malaria and three as a result of paresis; the remaining six deaths were the result of accidents, suicide and other diseases.

TABLE 1.—*Annual Clinical Status of One Hundred Patients With Paresis Observed from Two to Five Years*

	1924	1925	1926	1927	1928
In remission, per cent.....	Not appraised	38	49	41	38
Improvement, per cent....	Not appraised	15	17	25	31
No change, per cent.....	Not appraised	25	11	11	17
Deaths during the year....	Not appraised	7	1	2	4

The serologic reports in this series of patients with paresis are equally encouraging (table 2). In sixty of the group the spinal fluid has been reexamined during the last six months and has been found to be completely negative in all factors in 52 per cent of the cases. In an additional 30 per cent the spinal fluid reactions have been materially improved, although a weakly positive Wassermann reaction and a positive Nonne reaction persist; the cell count is well within normal limits.

The study of the serologic reactions of thirty-eight of the forty patients who were in complete remission showed that twenty-eight (73 per cent) now have completely negative reactions of the spinal fluid and blood. In all cases the serologic tests on the blood were done by both the Kolmer technic and the Kahn technic.

The results in the treatment of patients with taboparesis have not been so satisfactory. Of the thirteen patients in this group, four are in complete remission, three are somewhat improved, and six are dead. The poor results in this group are in a measure attributable to the fact that these patients had been under treatment for tabes dorsalis, both in the clinic and elsewhere, for many years, but none the less the disease continued to progress clinically. The treatment by malaria was given as a last resort. In our experience these are unsatisfactory circumstances in which to use fever therapy because the progressive downhill course is frequently accelerated by the treatment. The advanced parenchymatous changes and the general debility associated with them will not withstand malaria. Their counterpart is seen in the patient with advanced signs of paresis.

TABLE 2.—*Results of Examination of Spinal Fluid in Sixty of the One Hundred Cases of Paresis*

	1924	1925	1926	1927	1928
Reversed to negative, per cent...	Not estimated	Not estimated	21	57	73
Improvement, per cent.....	Not estimated	Not estimated	24	33	11
No change, per cent.....	Not estimated	Not estimated	55	10	11

* From the Section on Dermatology and Syphilology, the Mayo Clinic.
* Read before the Section on Nervous and Mental Diseases at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

1. Wagner-Jauregg, J.: Malariatherapie, Wien. klin. Wchnschr. **41**: 672-674 (May 10) 1928.

On the other hand, the group of patients with neurosyphilis classified as paresis sine paresi, or asymptomatic paresis, manifested satisfactory results. Included in this group are patients who have been under treatment for parenchymatous or interstitial neurosyphilis with the use of intravenous, intramuscular and intraspinal measures for periods varying from one to three years. In spite of the treatment there was evidence of clinical progression and failing acuity, but none of them showed enough evidence of mental impairment to warrant a diagnosis of paresis. The reactions of the spinal fluid had remained persistently positive, with a persistent zone 1 or paretic type of colloidal benzoin and colloidal gold curve. In this group are included also the patients to whom the term "chronic relapser" has been applied because the spinal fluid reverts to normal while the patient is under continued treatment, only to relapse with marked pleocytosis and a persistent zone 1 or paretic gold or benzoin curve when the patient is given a rest period. Of these twenty-two patients, ten have manifested complete reversal of serologic reactions to negative, and decided clinical improvement has been noted; six (20 per cent) have improved; two have died, and four have not derived benefit or were made worse.

The asymptomatic neurosyphilitic patient is the ideal subject for fever therapy. The distinguishing features between cases of asymptomatic neurosyphilis and those of paresis sine paresi are not always clear-cut. In the former group the reactions of the spinal fluid are positive but the patient does not show objective signs of neurosyphilis, whereas in the latter group the early clinical signs and the persistent serologic reactions of the paretic type are not influenced by treatment. The results in this asymptomatic group can be determined only by serologic changes. Of the ten patients who have been under observation now for more than three years, seven have experienced complete reversal to normal of all the factors in the spinal fluid. In three there has been limited improvement in the serologic reactions. In a previous communication, one of us [2] called attention to the fact that this asymptomatic neurosyphilitic group offers the ideal field for fever therapy. Continued observation seems to confirm this impression.

TABLE 3.—*First and Second Courses of Antisyphilitic Therapy*

Date	Original Arsphenamine	Mercury
9/29/26 to 10/15/26	6 injections (3.1 grams)	16 injections of succinimide (2⅔ grains)
10/15/26 to 11/20/26	.....	40 inunctions
11/26/26 to 12/31/26	6 injections (2.6 grams)	18 injections of succinimide (3 grains)

As an example of the value of treatment by malaria in the treatment of neurosyphilis, associated with acute syphilis of the meningeal type, the following case history is cited:

In September, 1926, an unmarried woman, aged 21, presented herself at the Mayo Clinic with secondary manifestations of syphilis in the form of grouped follicular lesions and mucous patches from which the dark-field examination was positive for *Spirochaeta pallida*. The Wassermann reaction of the blood was strongly positive. Antisyphilitic treatment was started at once and four courses of intravenous arsphenamine, intramuscular injections of mercuric succinimide and mercury inunctions were given as indicated in tables 3 and 4.

During the second course of arsphenamine the patient complained of persistent headaches, but examination of the spinal fluid at this time revealed a negative Wassermann reaction, a negative Nonne reaction, and two cells. The Wassermann reaction of the blood was negative at the end of the second course.

The patient did not return for the fourth course of arsphenamine at the stated time but allowed four months to elapse before she returned. During this time she took twenty-four mercury rubs. She returned, Aug. 16, 1927, complaining particularly of persistent occipital headaches; examination of the spinal fluid showed a strongly positive Wassermann reaction, a positive Nonne reaction, 9 cells, and a colloidal benzoin curve

TABLE 4.—*Third and Fourth Courses of Treatment*

Date	Original Arsphenamine	Mercury
1/10/27 to 2/20/27	.....	24 inunctions
3/ 4/27 to 4/ 8/27	6 injections (2.4 grams)	15 injections of succinimide (2½ grains)
6/10/27 to 7/ 4/27	.....	24 inunctions
8/25/27 to 9/29/27	6 injections (2.7 grams)	20 injections of succinimide (3⅓ grams)

of 012103332000000. The Wassermann reaction of the blood had also relapsed to total inhibition after it had been negative for eight months. The fourth course of combined arsphenamine and mercury, consisting of six injections of original arsphenamine (2.7 Gm.) and twenty injections of mercuric succinimide (3⅓ grains, or 0.22 Gm.), was given between August 25 and September 29. The patient returned two months after the completion of this course because the headaches persisted. Tests of the blood and spinal fluid were still strongly positive, and there was an increase in pleocytosis to 49 lymphocytes. Accordingly, she was inoculated Jan. 10, 1928, with *Plasmodium vivax* and allowed to run a course of malaria consisting of twelve chills. The results of two examinations of the spinal fluid and blood since that time are given in table 5.

Antisyphilitic treatment has not been given since the malaria, and there has not been a return of symptoms.

From the observations in this and other similar cases, we now recommend the use of fever therapy when prolonged treatment with the arsphenamines and mercury or bismuth which was started during the early manifestations of acute syphilis has failed to control the unfavorable progress of the diseases as manifested by the condition of the spinal fluid. Patients with acute syphilis who have neurorecurrences following a supposedly satisfactory course of treatment may also be candidates for fever therapy. We do not mean to imply by this that all patients with acute syphilis should be treated in this manner, but it is a most satisfactory method of treatment when measures used as a routine fail to control the progressive development of neurosyphilis during the early course of the disease. The recognition of such progress demands three or four examinations of the spinal fluid during the first two years of the disease.

TABLE 5.—*Reaction of Blood and Spinal Fluid After Malaria*

	Spinal Fluid		Blood
7/18/28	Wassermann reaction negative, Nonne reaction negative, 7 cells, colloidal benzoin curve 000003331000000	7/18/28	Wassermann reaction negative
7/17/29	Wassermann reaction negative, Nonne reaction negative, 3 cells, colloidal benzoin curve 000033332000000	5/16/29	Wassermann reaction negative

The patients with tabes dorsalis and its varying complications who were treated by malaria have not maintained the improvement that their early observation suggested. In this group are thirty-four patients with tabes dorsalis, of whom twelve had gastric crises, fifteen optic atrophy, three persistent leg pains and four the

2. O'Leary, P. A.: Treatment of Neurosyphilis by Malaria: Serologic Results and Comparison with Treatment by Typhoid Vaccine, J. A. M. A. 91: 543-545 (Aug. 25) 1928.

uncomplicated progressive type of tabes dorsalis. One of the patients with gastric crises has been completely relieved for three and a half years. Five (41 per cent) have noted a decrease in the severity of the attacks and an increase in the interval between them. The remainder have not derived any benefit. Of the three patients with persistent leg pains, one has been completely relieved and two have not improved. The patients with optic atrophy have practically not derived any benefit, the majority continuing to lose vision slowly and progressively. One of the cases of uncomplicated tabes dorsalis has shown complete reversal of serologic reactions to negative, with general tonic improvement paralleling it. It is obvious that the results in the tabetic type of parenchymatous neurosyphilis, in our experience, have fallen far short of the results obtained in the paretic type.

In reporting these results in the various types of parenchymatous neurosyphilis we have commented rather freely on the results of the serologic tests. However, it is not our belief that the study of the spinal fluid and the blood affords a true index of the value of the remedy. In several cases an outstanding clinical remission of four years' duration has not been paralleled by a significant serologic change. The converse also has been noted, wherein complete reversal of the serologic reactions to negative has not been attended with clinical improvement.

TREATMENT BY TYPHOID VACCINE

In June, 1926, we started to use typhoid vaccine intravenously in an effort to reactivate the chills and fever of patients in whom the malaria had aborted after a short and incomplete course. Later, we used the typhoid vaccine for patients in whom we were unable to produce malaria and in those in whom malaria had aborted following a few fever bouts. Kunde, Hall and Gerty [3] first reported on this form of treatment in October, 1927. Forty-eight patients with paresis have been treated in the clinic by this method and observed for from one to two years. Our experience with treatment by malaria makes us hesitate to pass judgment on the treatment by typhoid vaccine at this time, particularly because when we first used typhoid vaccine we failed to produce enough paroxysms and likewise hesitated to use sufficiently large doses.

From a study of this group it is obvious that to obtain satisfactory results from treatment by typhoid vaccine a larger series of chills must be given than with malaria and that increasingly larger doses of the vaccine are necessary to produce satisfactory reactions. However, malaria and typhoid vaccine have in common the fact that in the majority of cases of paresis high fever with marked constitutional reaction seems necessary to produce satisfactory remissions. The injections may be given every other day, from twenty to twenty-five injections to constitute a course, starting with 25,000,000 bacilli injected intravenously, and increasing the dose, depending on the patient's tolerance to the typhoid vaccine; however, usually intolerance can be overcome by giving much larger doses. The complications, although not so numerous, resemble those of malaria in a less pronounced manner. Varying degrees of jaundice, hepatitis, nephritis and myocarditis have been noted. However, severe dementia has not been encountered even in association with high fever. A series of patients with other types of neurosyphilis also has been treated, but as yet the number is not large enough to warrant deductions.

Treatment by typhoid vaccine has several advantages over treatment by malaria. The occasional patients with resistant neurosyphilis may be treated with vaccine at home. Deaths have not occurred in our series, complications have been fewer and less serious, and it seems that an institution organized for the care of such patients is not necessary for such treatment. On the other hand, it should be borne in mind that the therapeutic results following treatment by typhoid vaccine are decidedly less marked than those following treatment by malaria, as the remissions are slower and less pronounced in developing, and there are decidedly fewer remissions.

CONCLUSIONS

From June, 1924, until April, 1929, we treated 509 patients by malaria. An additional 140 patients were inoculated with *Plasmodium vivax*, but malaria did not develop. The patients who have shown outstanding results are those with early manifestations of paresis, those with paresis sine paresi, and those with asymptomatic neurosyphilis who failed to show response to intravenous medication. Of the original twenty-four patients treated by malaria and reported on in 1925, ten are still in complete remission; five have not shown improvement or have steadily progressed; four are dead, and five have not been heard from for more than two years.

The serologic reactions, although of interest, are not always of prognostic significance, and an effort to evaluate the method of treatment from the serologic reactions alone may be misleading. The objective signs of parenchymatous neurosyphilis which are the result of a destructive process in the nervous system are not materially influenced by this form of treatment. On the other hand, the more meningeal the degree of the involvement, the better the results.

Several patients who showed obvious clinical signs of paresis but who were in complete remission for about two years following treatment by malaria have manifested signs of slow but steady mental deterioration. The evidence from this study and a review of the literature indicate that the life expectancy of patients with paresis is increased by treatment with malaria, even though complete remission does not develop. Notwithstanding opinions to the contrary, results of this type are not a contraindication to the method.

Treatment by typhoid vaccine may be substituted if treatment by malaria is not possible, although the therapeutic remissions in our experience have been less frequent and less pronounced.

3. Kunde, M. M.; Hall, G. W., and Gerty, F. J.: General Paralysis; Effect of Nonspecific Protein Therapy on Blood and Spinal Fluid, J. A. M. A. **89**: 1304-1308 (Oct. 15) 1927.

The Smoke Problem.—Why should we be interested in the smoke problem? What harm does it do? The harm is so well understood that it should not be the subject of controversy. First, it is injurious to health. It affects the eyes, nose and throat and air sinuses, lowering the resistance of these parts to disease. It affects the respiratory tract and the bronchial tubes. That the soot reaches these tubes is readily seen by the blackish mucus coughed up in the morning. In the lungs themselves the carbon particles become embedded, and in time the lungs change their natural pink to a black color. The irritation of the smoke and particles produces scar tissue and in time interferes with the normal action of the lungs. In addition to its effect on health, there is loss of sunlight with its violet rays, due to the screening of the sun by the smoke—particularly so on foggy days.—Darlington, Thomas: Smoke, *New York State J. Med.*, Nov. 15, 1929.

ANTISYPHILITIC TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM *

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The treatment of syphilis of the central nervous system belongs to the everyday practice of the neuropsychiatrist. In this paper I shall give the experiences and results obtained with combined antisyphilitic treatment in the Wisconsin Psychiatric Institute at the University of Wisconsin. An analysis of the enormous literature dealing critically with clinical, serologic and research problems of neurosyphilis shows that there are few diseases more diversely treated and that the trend of syphilotherapy is unfortunately toward simplification, which is to be deplored. It is not known whether the antisyphilitic agents now in use are spirocheticidal or whether they primarily change the lipoid metabolism by an omnicellular hyperactivity with unknown colloidal changes by which the bodily resistance becomes increased and the activity of the spirochetes becomes reduced. Nearly all investigators agree that malarial inoculation is the treatment of choice for arsenical-resistant cases of neurosyphilis, especially in paresis. It is felt that, during convalescence from malaria, complemental therapy consisting of arsenicals, mercury and bismuth results in more frequent remissions. The results obtained with malaria are better than those reported from other antisyphilitic agents. The enthusiasm for malaria and other nonspecific methods should not lead to the discard of specific remedies.

Antisyphilitic therapy necessitates a knowledge of the biologic action of the drugs to be employed as well as their indications and reactions, which should be benign and controllable. Neurosyphilis cannot be treated by any routine procedure and cannot be standardized as yet. Each case presents a problem in itself. Only after a careful clinical and serologic investigation should the therapy be outlined, with substitutions if the drug of choice is not successful after a certain period of time. An individual adjustment is necessary depending on the constitution, the general health, the age and the sex of the patient. A robust individual can be treated more energetically than an emaciated one. The acute meningovascular case must be differently attacked therapeutically from the case of congenital neurosyphilis. Likewise the duration of treatment should be extended over variable periods and should be followed by rest periods depending on the progress of the disease.

INTRASPINAL THERAPY

In spite of many theoretical objections to intraspinal therapy, whether the Swift-Ellis or Gennerich method is employed, it remains a fact that in some resistant cases of paresis and tabes there is great improvement, while in other cases it fails utterly. The great sensibility of the brain and cord resulting from the metasyphilitic involvement necessitates extreme precaution. As a former student of Gennerich I have studied and employed this method carefully and have obtained satisfactory results in cases in which combined therapy failed to relieve pain or to change the serologic reaction. It should be, in my opinion, the last therapeutic attack. It is the treatment of choice in cases of rapidly advancing meningeal involvement, with severe crises, optic atrophy and increased intracranial pressure, and in those cases which present an intolerance to intravenous injections of arsphenamine. These are indications for the endolumbar therapy. The intraspinal injection of neoarsphenamine offers better results than the Swift-Ellis method. If the spinal meninges are more or less acutely inflamed, 1.35 mg. of neoarsphenamine in 60 cc. can be given safely twice a week according to Gennerich. If the cord is metasyphilitically changed, never more than from 0.3 to 0.5 mg. should be given in from 40 to 60 cc. of spinal fluid at intervals of three weeks. If a tabetic patient does not react subjectively and clinically to 0.3 or 0.5 mg. intraspinally, one can increase the neoarsphenamine medication to 0.75 and 1 mg. To relieve subacute symptoms referable to a basilar meningitis, neoarsphenamine can be given intraspinally by the cisternal route in doses of from 0.5 to 1 or 1.5 mg., or by a double puncture in the lumbar regions where the liquor in the lower buret pushes the liquor containing 0.5 to 1 mg. of neoarsphenamine in the upper buret brainward. Both administrations endeavor to keep the neoarsphenamine in the basilar cisterns and necessitate rest in bed for at least thirty-six hours with the patient in the Trendelenburg position.

The statement that the introduction of the arsphenamines has resulted in an increase in neurosyphilis is erroneous. The investigations of the German-Russian expeditions which studied syphilis in the Mongolian republic Burjato at Lake Baikal proved without doubt that neurosyphilis is just as common among people who never have been treated with European antisyphilitic measures. Statistics show that only from 8.8 to 15 per cent of syphilitic persons develop paresis, and that approximately 68.2 per cent of tabetic patients have never had antisyphilitic treatment. I consider it a scientific error not to treat primary and secondary syphilis with arsenicals, but we must keep in mind always that as much harm can be done by giving too much arsphenamine as too little. Unfortunately, most syphilitic patients are undertreated. Insufficient treatment with arsenicals is more injurious than no arsenical medication. Arsphenamine is the most stable arsenical with uniform toxicity and the greatest therapeutic effect, and is superior to neoarsphenamine. The inconvenience of its preparation and administration and the exigencies of office practice have led to the substitution of other arsenical preparations. The single dose should never exceed 0.6 Gm. and it should be given only once a week. Advanced cardiovascular disease is a contraindication to its use. Neoarsphenamine has a somewhat lower therapeutic efficiency than arsphenamine and necessitates a larger number of injections. It has a marked tonic effect, produces less gastro-intestinal reaction and is less irritative to the veins. Because of its much simpler administration, its use is more widespread, at least in office practice. I do not favor spinal drainage following intravenous arsenical injections because, if the defense mechanism of the meninges as a barrier between the blood and liquor is intact, nothing is gained by this procedure whereas, if this barrier is defective, exudations from the blood into the spinal fluid are present even without spinal drainage.

Disadvantages of arsphenamine and neoarsphenamine are the anaphylactoid or nitritoid crises, but preventive drugs such as atropine, epinephrine and ephedrine are able to check these unpleasant occurrences. Recently

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Girard, Gougerot and Bertillon recommended dissolving arsenical preparations in a 10 per cent aqueous solution of eosin-acid cesium, which will prevent the nitritoid crisis. Silver arsphenamine is said to be from two to three times as effective a spirocheticide as arsphenamine, but clinical experience has proved that it is not superior to the other arsenicals. I never have seen any beneficial effects from its use that could not be obtained in greater degree from other arsenicals. The arsenical preparation of choice for cases in which intravenous medication is difficult or impossible because of extreme obesity or inaccessibility of the veins is sulpharsphenamine, which is a forerunner of neoarsphenamine and resembles it closely in its chemical composition. According to Cornwall and Meyers of New York, it is two and a half times less active than neoarsphenamine therapeutically. Doses of from 0.4 to 0.6 Gm. are given intramuscularly at weekly intervals without constitutional reactions. My clinical experience with intramuscular injections of sulpharsphenamine, especially in congenital syphilis, has been very encouraging and it can be recommended highly as an effective agent in congenital neurosyphilis. Sodium acetylaminohydroxyphenylarsonate, a pentavalent arsenic preparation, has not been used. Many investigators recommend it highly for prophylactic therapy and praise its effectiveness in congenital syphilis. It is given orally in tablets containing 2 Gm., from two to three tablets being ingested for three days on an empty stomach. I feel that prophylactic syphilitic therapy should not be employed because it may mask the disease and later on, when symptoms develop which cannot be classified under syphilitic manifestations, the physician does not know whether to advise the patient that he is suffering from syphilis or not, and does not know how to manage the situation. The final result will be either a syphilophobia or late manifestations of nervous syphilis.

I have had no experience with bismuth arsphenamine sulphonate, which, according to G. W. Raiziss, is an ideal antisyphilitic remedy as it combines spirocheticidal and defense arousing properties and lacks toxic effects. It belongs to those compounds in which the arsenic group is bound to a metal. Stokes, Chambers and O'Leary have reported on it favorably but have had less satisfactory results in neurosyphilis than in other forms of the disease. At the Wisconsin Psychiatric Institute we have experimented for the last nine years with arsenical preparations which were chemically and biologically studied by the late A. S. Loevenhart.

I am convinced more than ever that tryparsamide is superior to all other forms of intravenous arsenical treatment in neurosyphilis. I could report a number of cases in which, in three years, from 14.1 to 17.9 Gm. of neoarsphenamine with from fifty-one to sixty-six injections of mercury was given without any clinical or serologic improvement. These cases have shown clinical improvement and completely negative serologic reactions after from twelve to sixteen injections of tryparsamide in combination with from thirteen to sixteen injections of mercury. This may indicate that cases given preparatory treatment with arsphenamine, neoarsphenamine, bismuth or mercury will respond more favorably to subsequent tryparsamide therapy. Whether tryparsamide is primarily a resistance builder as manifested by the gain in weight averaging from 2.3 to 18 Kg., or primarily a healer of lesions, as a result of spirocheticidal action, cannot be answered as yet, as sufficient pathologic reports are not available. Generally the dosage of tryparsamide is 3 Gm. per injection, but individual case adjustment necessitates variable doses of from 2 to 5 Gm. with a considerable latitude as to the intervals during its administration. W. F. Lorenz reported at the last meeting of this section our indications in the use of tryparsamide and the results that we obtained during the last six years. I must correct the statement often referred to in reports dealing with tryparsamide that the drug carries a menace to the optic nerves. Optic atrophy is not caused by arsenicals and especially not by tryparsamide, but by the disease itself. If the eye studies reveal impairment of the optic tracts, one should not use arsenicals, or should employ them very cautiously. The tonic effect of arsenical medications stimulates the present interstitial and perioptical inflammation and will lead to advancement of the disease, resulting in visual constriction and even optic atrophy.

Severe lancinating pains and gastric or renal crises require doses of from 4 to 5 Gm. of tryparsamide given at intervals of two weeks over a period of twelve weeks, or malarial therapy if optic atrophy is present. As a rule we prepare our patients, especially those with tabes, with mercury inunctions and potassium iodide over a period of from four to six weeks before we decide whether they should have arsenical medication, especially tryparsamide. I feel that mercury is absolutely equal in efficiency to bismuth and have not substituted bismuth for mercury for this reason. I have not seen toxic effects from mercury when mercury is used in the form of inunctions or weekly intramuscular injections of from 0.05 to 0.1 Gm. of the salicylate in a palmitin base. In the treatment of mild tabes I follow more than ever the recommendation of Nonne; that is, mercury inunctions and potassium iodide for a period of from six to eight weeks, to be repeated every six months. Oppenheim stated one year before his death that a tabetic patient without a distinct tendency to progress was better off without vigorous antisyphilitic therapy. In our treatment of syphilis of the central nervous system, the iodides take an important place. Each patient receives iodides previous to arsenical injections. It is not advisable to use large doses. From 3 to 10 minims (0.18 to 0.6 cc.) three times daily is sufficient to dissolve granulomatous tissue and enhance the penetrability of arsenicals, mercury or bismuth.

CONCLUSION

Finally I wish to stress the importance of individual case adjustment in central nervous system syphilis. Preparatory therapy, preferably mercury inunctions and iodides for from one to two weeks, is to be recommended before the most suitable arsenical preparation is employed. I favor among the arsenicals tryparsamide and, next to that, neoarsphenamine in cases without optic tract involvement, and warn against the use of any arsenical in advanced parenchymatous cases. The latter should be treated by nonspecific methods, among which malaria is the most efficient. Sulpharsphenamine has been the drug of choice in the treatment of congenital syphilis, but I have had good results in a number of cases of congenital neurosyphilis that have been treated with malaria followed by tryparsamide and mercury in the case of paresis, and tryparsamide combined with mercury and iodides in juvenile tabes. I would advocate the same treatment for the congenital forms as for the acquired forms of neurosyphilis.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. O'LEARY AND BRUNSTING AND DR. REESE

DR. FRANKLIN G. EBAUGH, Denver: Tryparsamide has proved to be one of our leading drugs in the treatment of neurosyphilis. Malaria therapy followed by other methods of nonspecific therapy has also improved the generally unsatisfactory results existing a decade ago. Our cases have been entirely unselected. Since 1925 we have treated 171 cases of neurosyphilis, chiefly paresis. Nonspecific therapy, sodoku, malaria and typhoid vaccines have been used. The malaria inoculation has proved the most effective and has been instituted as a routine procedure, combined with tryparsamide and arsphenamine and general therapy. Of the 171 patients treated now available for statistical consideration, ninety-nine, or 58 per cent, have been returned to the community; forty-five, or 27 per cent, are living but unrestored; and twenty-seven, or 15 per cent, are dead. At present there are sixty-four cases of postmalarial neurosyphilis under active treatment in our outpatient department. These patients have been followed closely year by year by our social service department. Thirty-two of the sixty-four are now working. Twenty, or 31 per cent, are not able to work; four, or 6 per cent, are unable to secure work; five, or 8 per cent, are housewives, and three, or 5 per cent, are children. Using clinical criteria alone as a standard, we find that approximately 23 per cent attain complete remissions; 30 per cent attain incomplete remissions, and 5 per cent attain slight improvement, sufficient to avoid complete invalidism. It seems to me that we can now make a definite summary of this type of therapy. First, malaria therapy is at present the best known method of treating neurosyphilis, and should be combined with tryparsamide or arsphenamine. Second, complete remissions may occur in all the clinical types of neurosyphilis. Third, a case that does not go into the remissive stage may show a prolonged and marked physical improvement. Fourth, malaria does not seem to be as successful in the treatment of women as of men. Fifth, juvenile paresis, as a rule, does not appear to be benefited by this type of treatment. Sixth, a comparison between specific and nonspecific and a combination method of treatment should continue and should lead to a formulation of the definite therapy of the future. Seventh, our present diagnostic and prognostic criteria present many inaccuracies. Unknown forces operate in producing or in not producing a remission, and our present-day social and economic standards as criteria of remissions appear inaccurate.

DR. A. A. HEROLD, Shreveport, La.: Although I hail from Louisiana, supposed to be the hotbed of malaria, on several occasions when I wanted fresh cultures or specimens of active malarial blood, I was unable to procure them. Dr. Ebaugh referred to other agencies than those mentioned by Drs. O'Leary and Brunsting, one of which was sodoku. I have seen some remarkable results from sodoku. In New Orleans they keep a culture of a very active sodoku or ratbite fever with which they inoculate the paretic patients, and some of the results have been fully as good as those obtained with malaria treatment. The advantage is that one dose of arsphenamine or neoarsphenamine will stop the sodoku immediately. So far as arsenicals are concerned, my experience has been that we may expect more results from the tryparsamide than from any other arsenicals. We have been cautious to watch the eyes in administering it, for it is supposed to have an unusually injurious effect on them; but in my experience I have never seen any bad effects on the eyes from the use of tryparsamide. I have treated several small children with congenital syphilis with this drug and I have obtained marked clinical improvement, but the serologic improvement was always slow in my experience.

DR. THEODORE DILLER, Pittsburgh: In 1903 a man presented himself with a typical case of tabes paresis. I saw him several times, and then he disappeared from my sight. About a month ago he returned to the office, after twenty-six years. His condition seemed to be just about as it was in 1903. He had had no treatment of any sort. It was one of those cases of arrested development or arrested progression. It was a consideration of such cases that made me slow to accept the improvement following malarial treatment. Even now I feel that we must be cautious and go at the matter with some reserve. However, these doubts were a good deal dissipated last summer when I met Professor Wagner and examined a large number of patients in his clinic. He has treated more than a thousand; I think his figure is 1,600. I saw many of these patients and studied their records, and it was really remarkable to see how well they were doing. It was also remarkable to see how eager these patients were to return to the clinic for reexamination.

DR. WALTER FREEMAN, Washington, D. C.: The question used to be in regard to malaria: Will it work? We have solved that, I think. It does work. Now the question is: Will it last? and the report of Dr. Brunsting seems to indicate that it will last. In calculating surgical recoveries, five years is usually considered adequate. May it not be the same in the case of these mental diseases? I merely wish to indicate how long such a remission may last from some of my experience in the pathologic service at St. Elizabeth's Hospital. Three patients came to necropsy in the stage of arrested paresis, so called, one having been admitted in 1911, another in 1913 and another in 1914. These men had completely developed paresis at the time of admission, and yet they attained a quiescent state. Even the serologic changes were reversed practically to normal. In going into the history of these men we found that in two cases there had been attacks of malaria shortly before or shortly after admission to the hospital, and the other man had suffered from a severe pleurisy with pneumonia and high fever. The necropsy observations left me doubtful as to the syphilitic etiology of one case, but in the other two cases there were definite scarrings of the aorta and puckerings in the capsule of the liver that indicated a previous syphilitic infection. These patients died not of paresis but of a cardiac disorder, or some other condition. That, it seems to me, indicates that these arrested cases might almost be termed recoveries.

DR. WALTER L. BRUETSCH, Indianapolis: Evidence is accumulating from the clinical as well as experimental side that temperature plays only a subordinate rôle in the mechanism of malaria therapy. In 1926 a colored paretic patient was treated with malaria at the Central State Hospital of Indiana. While under treatment the patient never had any rise in temperature. Blood smears, however, showed the presence of plasmodia and a moderate monocytosis. The patient improved physically but remained in the institution. The amazing feature in this case was the serologic reaction, which improved gradually and after two and one-half years was reversed to normal. Furthermore, the finding of spirochetes in the brains of malaria-treated patients speaks against the assumption that temperatures which can be produced with safety in man are capable of destroying syphilitic organisms. In a paretic patient who was treated twice with malaria and who has had elevations of temperature ranging between 104 and 105 F. I was able to find spirochetes in the brain cortex on histologic examination. If, therefore, the rise in temperature is not the main factor in bringing about the improvement, one can look for an explanation on the basis of specific tissue changes. The histologic changes under malaria treatment consist, broadly speaking, of a stimulation of the reticulo-endothelial system, leading to new formation of phagocytic tissue in all the organs of the body. The increase in weight of the liver and spleen which is found in patients who die under malaria treatment is mainly due to an almost tumor-like growth of phagocytic tissue. Moreover, proliferative phenomena in the capillary endothelium of the brain and internal organs take place which are evidenced by the appearance of blood histiocytes in the veins of the internal organs. This endothelial phase apparently is connected with the reduction of the increased permeability of the brain capillaries which is noted in those patients who respond well to malaria therapy. It seems that these two phases of therapeutic malaria, new formation of phagocytic tissue and endothelial stimulation of the cortical capillaries, are two factors which, among others, are responsible for the beneficent effect of malaria treatment.

DR. L. A. BRUNSTING, Rochester, Minn.: Our experience with fever therapy has been limited to the use of inoculation malaria and typhoid vaccine intravenously. Following a suit-

able course of fever the patient is given a rest period of about six months and the matter of further therapy is taken up after reconsideration at the end of that time. Some of the paretic patients in particular may be given further courses of fever by means of typhoid vaccine, or specific measures such as tryparsamide or the Swift-Ellis intraspinal treatment in repeated courses in the usual fashion over an extended period of time. There are some persons who seem to be naturally immune to the malaria, refusing it altogether or tending to abort the series after a few preliminary paroxysms. In these we have had no appreciable success with reinoculation and deem it more expeditious to carry on with intravenous injections of typhoid vaccine. In order to achieve a satisfactory response it is sometimes necessary to use enormous numbers of bacilli with each injection and to carry the series through for a total of about twenty good reactions. In general, the best results have been obtained in those patients who have developed vigorous systemic reactions with high fever, sometimes reaching 105 and 106 F. There have been no serious manifestations of idiosyncrasy to quinine. Relapses of malaria have occurred in a few rare instances but these have been easily controlled by further quinine therapy. There are certain types of patients in whom it would be well to postpone the use of such measures as malaria, particularly the extremely agitated paretic patient and also the patient with taboparesis showing considerable lower cord involvement and especially disturbances of the genitourinary system. Deaths directly attributable to malaria are fewer as experience grows both in the selection of cases and in the recognition of complications such as jaundice and early uremia during the course of malaria.

DR. HANS H. REESE, Madison, Wis.: I have treated patients since 1900, and a great number were restored practically to normal health and have returned to their former occupations. In that first group from 1927, about eighteen cases are still in complete remission or are clinically arrested.

CHEST ROENTGENOGRAMS OF NONTUBERCULOUS CHILDREN SUSPECTED OF BEING TUBERCULOUS *

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There exists a marked confusion in the interpretation of the shadows in the roentgenograms of children's chests. This is well illustrated by the recent paper of Hawes and Friedman [1] in which it was shown that no agreement existed in the six separate interpretations of a series of films given by a pediatrician, two tuberculosis specialists and three roentgenologists. The basic reason seems to be that there is no general agreement on the possible changes to be seen in a nontuberculous chest. This preliminary study was undertaken to determine the condition in the chests of nontuberculous children in order to establish a basis for a further study of the chests of tuberculous children.

The cases studied were referred to the Children's Chest Clinic of the University of California Hospital because they represented symptoms suggesting tuberculosis or were regarded as possible contact cases. The control group consisted of normal children from the Institute of Child Study, University of California, Berkeley. A complete clinical history was taken and a physical examination was made of each patient. All of them were tested with human tuberculin in the concentration of 1 : 1,000 and 1 : 100 and with a broth control, by the intracutaneous injection of 0.1 cc. The reactions were observed after forty-eight hours. The group selected for study consists of those who did not react at all to the tuberculin. It is assumed that, when obtained in the absence of any acute condition, the negative tuberculin reaction indicates that no infection with the tubercle bacillus exists or has previously existed. This is generally accepted at the present time.

The roentgenograms were made with a routine technic: For the younger children the distance was 42 inches (106.7 cm.) with the child prone, and for the older children, 48 inches (122 cm.) with the child upright in the postero-anterior position. The x-ray tube was centered on the fifth dorsal vertebra. Lateral films were made in most cases. The films were made during a period of four years and the time of exposure decreased as better equipment became available, to the present exposure of one-tenth second. The general character of the films obtained is such as can be reproduced in all well conducted x-ray departments. We are well aware that with special methods, such as the synchronized roentgen exposures used by McPhedran or the constant exposure time of Wasson, greater accuracy is possible, but their observations cannot often be duplicated at present by the general clinic. The present study is justified because the results can be utilized generally.

The roentgenograms present shadows of densities and localizations that have to be interpreted in terms of normal and abnormal morphology. McPhedran,[2] Armand-Delille,[3] Stierlin and Chaoul,[4] Engel [5] and others attempted to correlate the observations in roentgenograms made before and after death with pathologic examinations conducted particularly for this purpose. The results of their studies make the following interpretations seem reasonable.

The hilar shadow is cast by the main stem arteries, veins and bronchi. Paratracheal and all bronchial lymph glands, unless calcified, show only when they are so enlarged as to extend beyond the shadows of the main stem. McPhedran concludes that "calcium-free glands, however enlarged, fail to cause perceptible intensification of the mediastinal shadow." The hazy perihilar shadows frequently seen are not due to enlarged bronchial glands or fibrosis but to pulsation and resultant vibration of the arteries. McPhedran has clearly shown that this vibration is not eliminated by exposures even of one-fortieth second unless they are made in late diastole.

Calcification of the glands is recognized by a shadow of granular appearance. The shadows frequently interpreted as calcification are due in reality to vessels running axially to the x-rays. These are homogeneous in density and round or oval. Their density depends on the distance they run axially and may be as great as or greater than that of a calcified gland. This can be proved by making a second exposure of equal density from a different angle. It may be necessary

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* From the Department of Pediatrics, the Department of Roentgenology and the George Williams Hooper Foundation for Medical Research, University of California Medical School and the Institute of Child Welfare, University of California.

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3. Armand-Delille, P. F., and Lestocquoy, C.: Tubercle **9**: 359 (May) 1928.
4. Stierlin, E., and Chaoul, H., in Sauerbruch: Chirurgie der Brustorgane, Berlin, Julius Springer, 1925.
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to make a shift greater than the routine stereoscopic so that the vessel no longer runs axially to the ray. In this film the shadow can no longer be seen.

The normal markings seen beyond the hili are due to a combination of bronchi and vessels, the vessels assuming a more important rôle as the periphery is approached. The interpretation of increases in these markings is still in doubt. It is definitely known that vascular congestion produces increased shadows. Whether other increases in the markings are due to fibrosis of the peribronchial tissue or to decreased elasticity of the lung, and hence to lessened vibration, is still uncertain. In the present study, localized increases in the markings are recorded without reference to the definite explanation of such increases.

Axial vessels are frequently seen throughout the lung shadow but are nearly always in direct relation to other vessel markings.

The method adopted for this study was to tabulate for each case a complete clinical summary and all definite data from the x-ray films and attempt to see whether there was any correlation between the two. On the clinical sheet were listed the age, contact or noncontact, previous diseases (bronchitis, pertussis, measles, pneumonia, repeated upper respiratory diseases and asthma), symptoms (loss of weight, poor appetite, listlessness, nervousness, cough, night sweats and disturbed sleep), physical signs (d'Espine's sign, vertebral dulness, paravertebral dulness, dulness of the manubrium sterni, abnormal observations on percussion and auscultation and any limitation of expansion), nutrition, any enlargement of the cervical glands, condition of the tonsils and the diagnosis.

From the x-ray films were listed the following data: for each hilus separately, the size, position and consistency of any shadow of calcification, the presence or absence of any glandular tumor, the number, size and position of all axial vessels, and any localized increase in the density of the hilar shadow; for each lung, the size, position and consistency of any shadow of calcification or infiltration, the density, width and localization of increased lung markings, the size, position and number of any axial vessel markings and nodular shadows; and for the pleura, any localized increases in density.

The following observations on the ninety-three cases were compared with those for twenty normal children examined at the Institute of Child Study in Berkeley:

No calcifications were found in either the hili or the lung fields, with the doubtful exception of one small, slightly granular shadow in the lung tissue.

No glandular tumor was found.

There were seventy-four cases in this series with multiple large axial vessels in the hilus on both sides, and twenty-four with a single large axial vessel on each side.

Roentgen and Clinical Observations on the Chests of Nontuberculous Children

			Hilus		Lung				
	Children's Chest Clinic	Institute of Child Study	Multiple Large Vessels, Both Hili	Single Large Vessel in Either Hilus	Multiple Axial Vessels Up to 2 Mm., Upper Left Lobe	Multiple Axial Vessels Up to 3 Mm., Upper Left and Right Lobes	Increased Markings in Either or Both Upper Lobes	Without Increased Markings	Interlobar Pleura; Thickened Interlobar
Total number in:									
Children's Chest Clinic	93	..	74	24	40	19	35	58	12
Institute of Child Study	..	20	18	..	11	0	3	17	2
Percentages:									
Children's Chest Clinic	..	..	79	26	43	20	37	62	13
Institute of Child Study	..	..	90	..	55	0	15	85	10
Average per child:									
Respiratory diseases	2.3	1.7	2.4	2.4	2.5	2.6	2.2	2.4	2.1
Symptoms	1.4	0.8	1.4	1.8	1.6	1.4	1.5	1.4	1.8
Age	8.0	3.5	8.2	9.3	7.9	0.9	7.9	...	7.5
Contact, per cent	38	5	39	42	37	37	43	34	75
Noncontact, per cent	62	95	61	58	63	63	57	65	25
Previous diseases (percentages):									
Bronchitis	46	40	47	42	55	37	40	50	58
Pertussis	45	20	45	58	53	47	51	41	17
Measles	57	15	61	62	55	42	46	64	50
Pneumonia	19	5	19	16	20	16	17	21	16
Disease of the upper respiratory tract	60	90	59	58	65	63	63	58	70
Asthma	3	0	4	4	2	5	0	5	0
Symptoms (percentages):									
Loss of weight	17	15	16	25	18	32	17	17	25
Poor appetite	23	15	26	21	30	16	23	24	8
Listlessness	18	25	19	33	23	5	23	15	32
Nervousness	31	25	26	42	38	26	31	33	56
Cough	31	..	26	28	30	32	37	28	33
Night sweats	15	..	15	21	15	10	14	15	8
Sleep disturbed	9	..	11	4	8	21	3	12	17
Signs (percentages):									
D'Espine's below the fourth thoracic vertebra	44	5	38	54	54	39	42	40	55
Vertebral dulness	9	..	7	14	21	17	12	7	18
Paravertebral dulness	23	5	18	10	17	24	25	17	63
Manubrium sterni dulness	30	10	23	18	26	32	39	22	45
Pathologic percussion	6	0	6	22	8	5	11	3	8
Pathologic auscultation	34	15	45	42	38	42	37	33	42
Limited expansion	3	..	4	8	2	5	3	3	0
Cervical glands enlarged	72	45	51	79	65	74	77	68	64
Tonsils enlarged	37	15	29	37	25	32	29	43	32
Tonsils removed	26	30	23	16	40	47	23	28	25
Normal weight	44	90	29	38	42	47	51	40	59
Malnutrition	40	10	30	46	45	26.5	40	40	41
Overweight	17	..	15	16	13	26.5	9	22	0
Clinical diagnosis:									
Chest normal	42	..	45	38	38	53	34	46	25
Bronchitis acute	4	..	6	0	7.5	5	3	5	0
Bronchitis subacute	11	..	7	8	15	16	14	9	8
Bronchitis chronic	3	..	4	4	7.5	5	3	3	8
Enlarged bronchil glands	35	..	31	38	30	16	40	32	51
Asthma	3	..	4	4	2	5	0	5	0
Healed pneumonia	2	..	3	8	0	0	6	0	8

No localized increases in the density of the hilar shadows were found.

No localized shadows were seen in the lung that could be interpretated as areas of infiltration.

There were thirty-five cases in which localized increases in the width or density of the lung markings were seen in either upper lobe. The sharp, clear-cut bronchial tree markings seen in tuberculosis of adults were not found in a single case. The increase was just sufficient to mark those mentioned from the others present or normally expected. No studding of these markings was noted.

Forty cases were found in which there were multiple axial vessels up to 2 mm. in diameter in the upper left lung field; there were many more in the upper right lung field. There were nineteen cases with multiple axial vessels up to 3 mm. in diameter in each upper lung field.

The only area of increased pleural shadow in more than two cases was the interlobar fissure between the right middle and upper lobes; this observation was made in twelve cases.

The clinical data on all the cases showing each of the roentgen characteristics described were listed in separate groups, and the percentages of each previous symptom, sign and diagnosis were calculated. Finally, all groups were united into one table.

Taking a few facts from this table, it is seen that:

1. The average number of previous diseases per case varied only from 2.2 to 2.6 for the various groups, with the whole series at 2.3.

2. The average number of symptoms presented by each group varied between 1.4 and 1.8 per case.

3. The average age of the whole series was 8 years, the youngest patient being 2 years of age and the oldest 15.

4. Of especial interest is the observation that the group without increased markings in the upper lobes had a higher incidence of past respiratory diseases, especially bronchitis, measles and pneumonia, than the group with increased markings.

5. The Institute of Child Study group with an incidence of previous disease of 1.7 per child and with an average age of 3.5 years showed in comparison with the clinic group a higher percentage of multiple axial vessels at the hili, a slightly higher percentage of multiple axial vessels up to 2 mm. in diameter in the upper left part of the chest, no vessels of 3 mm. in either lung field, and a somewhat lower percentage of localized increases in the lung markings.

6. There was no increase in the number showing positive d'Espine's sign, vertebral dulness, paravertebral dulness and dulness of the manubrium sterni in the cases presenting multiple axial vessels at the hili.

The definite impression gained by a survey of the whole table is that there is no marked variation in any of the groups. One exception to this observation is the group of twelve cases showing the interlobar pleura, which is obviously too small a group to consider.

CONCLUSIONS

1. The roentgenograms of the chest of children without acute illness and giving a negative tuberculin reaction may show single or multiple, large or small axial vessels in the hili, multiple axial vessels up to 2 or 3 mm. in diameter in the lung tissue, localized increased lung markings, localized pleural thickenings, or none of these shadows. It is therefore apparent that a diagnosis of tuberculosis of the mediastinal glands or lung tissue cannot be based on these observations.

2. No calcifications, glandular tumors or localized pulmonary infiltrations were found.

3. No definite correlation was found to exist between the positive roentgen observations and the clinical history.

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ABSTRACT OF DISCUSSION

DR. FRANK C. NEFF, Kansas City, Mo.: There is need for a standard or basis for determining what a roentgenogram of the hilus really means in children. We must know more about two things in our interpretation of these roentgenograms. The first is to determine whether we can tell the difference between these small areas which are sometimes interpreted as small glands and which Dr. Wolff shows are really the shadow caused by the blood vessel which runs at right angles to the film. He says that it is not entirely a matter of the size of these which determines it, but that a shadow which represents a deposit of lime in the tissues really presents a granular appearance. The other question is this: If we are going to come to any conclusion about the interpretations of films, we should consider the value or the relationship of the tuberculin skin test to these conclusions. I was rather surprised to find that Krause is quoted as saying that tuberculosis, particularly of the glandular type, may so entirely disappear that even the skin reaction will become negative. Some no doubt read the communication in the *American Review of Tuberculosis* a couple of years ago by Bitter and Meyers in which they stated that nearly as many children with calcified hilus glandular tuberculosis show negative skin tests as positive skin tests. Those two things are rather disquieting if one tries to come to any conclusions from a correlation of the films with the symptoms.

DR. F. M. POTTENGER, Monrovia, Calif.: To differentiate between a tuberculous and a nontuberculous lesion of the lung by roentgenograms often requires great skill and much experience in interpretation. The tuberculin test, if positive, is valuable because it shows that a tuberculous infection is present; but it does not indicate that the lung lesion is clinically tuberculous. Dr. Neff's question of how long sensitization will last after a lesion is healed is interesting and important. Krause followed a case through active tuberculosis to complete healing and final disappearance of sensitization. As I remember it, he followed his patient four or five years after healing. I think we can assume that sensitization will disappear after a time when caused by small lesions which completely heal. I have tested, fifteen or twenty years after treatment, patients who had previously suffered from advanced lesions, and found that sensitization was gone in some of them. The roentgenogram does not show everything. It will show calcification, unless the calcification happens to be low in the lung, so that the shadow is immerged into the liver shadow, or behind the heart where the shadow is lost in the general shadow of that organ. We know, too, that it will not always show, even if calcified and in the open lung field, because at times even the scapulae are not visible in a roentgenogram, and they contain more calcium than some small tuberculous lesions. Our minds are too much set on a calcified node of some size in the primary lesion. Doubtless many primary lesions are no more than a small scar; others, a calcified node no larger than a pinhead, the main part of the primary complex being the lesion in the lymphatic nodes. Unless the calcified nodule is in the proper plane, it may fail to cast a shadow on the plate. Those which lie in the plane nearest the plate will show most readily; while those that lie nearest the tube may totally fail to intercept the rays sufficiently to cast a shadow. Primary nodules which have healed by fibrosis may fail entirely to cast an interpretable shadow. A plate taken at 5 feet, or 2 meters, will show lesions that fail to appear on the plate when taken at 3 feet. Groedel has suggested that the plate may still be improved by having the patient stand 20 cm. from the plate. Tuberculous lesions that are not calcified may not show any shadow. The authors emphasize rightly the importance of shadows that are caused by blood vessels, which make for certainty in diagnosis.

DR. ERNST WOLFF, San Francisco: A negative tuberculin test may be obtained in one who was never infected or in a patient in whom tuberculosis is healed. All of the latter cases, which are rarely found, were cases without clinical symptoms. Dr. Neff's case probably belongs in this group. Of the 600 children who were followed up in our chest clinic, no patient with definite contact, definite exposure, clinical signs and symptoms, and glandular tumors in the roentgenogram could be observed who reacted negatively to tuberculin. On the other hand, among our ninety-three patients who reacted negatively, no glandular tumor was observed. It may be concluded that in the presence of symptoms and signs, provided overwhelming infection is not present, a negative test excludes tuberculosis. Ordinarily the casual infection with tuberculosis does not lead to the disappearance of the specific allergy, as proved by the positive skin test in nearly every healthy adult. When we have to answer the parents' question: "Is our child tuberculous?" we can rely on a negative reaction provided the test is done with properly prepared tuberculin and with good technic.

FRACTURES OF THE BONES OF THE FOOT OTHER THAN THE OS CALCIS*

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AND
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According to Bacon,[1] "in the total expense for loss of time, fractures of the metacarpals, metatarsals, and phalanges of both extremities exceed those of all other fractures combined, excluding awards for permanent total disability."

While this undoubtedly is true and while fractures of the bones of the feet are most frequent of all, they are most often undiagnosed. We think that this may be partially due to the fact that we have always been taught that fractures of the bones of the feet were easily diagnosed. Proceeding on that theory, we have allowed at least a third of them to pass for from two to four weeks; if by that time the patient had not recovered, we have had roentgenograms made. By then, however, the harm had been done and the diagnosis, except as to its effect on the prognosis, was of but little value.

ETIOLOGY

The next most important factor is the lack of realization as to the ease with which a fracture of the small bones of the foot may occur. It is hard for many to understand that the mere turning of the foot while walking or dancing, stubbing of the toe or the dropping of a small weight on the foot may cause fractures which, if not recognized, greatly prolong the disability.

While these fractures are most likely to be in the phalanges or fifth metatarsal, the second metatarsal has been known to be fractured by the dropping of a piece of two by four, weighing 2 pounds 10 ounces, a distance of 8 feet. Therefore if we will constantly keep in mind that the simplest trauma will cause a fracture, we shall examine roentgenographically at least 25 per cent more of these trivial injuries and thereby save ourselves much chagrin and the patient much suffering and disability.

DIAGNOSIS

The stereotyped statement that the diagnosis is easily made because the bones are superficial must be disregarded, if we expect to improve on our diagnosis and treatment of the fractures of the foot. It is especially important that the diagnosis be made immediately when fractures involve the bones on the inner or weight-bearing side of the foot, which compose the longitudinal arch. When the diagnosis is not made in these cases there may be, in addition to prolonged morbidity, more or less permanent disability.

DIVISIONS

In treating fractures of the bones of the foot other than the os calcis, we prefer to visualize the anatomic divisions of the foot in relation to their importance to function following fracture. We therefore have adopted the following grouping:

Fig. 1.—Fracture dislocation through the neck of the astragalus. In this case it was necessary to remove part of the free fragment before reduction could be accomplished.

1. Astragalus.
2. Inner tarsals, which with the first, second and third metatarsals constitute part of the longitudinal arch.
3. The fourth metatarsal.
4. The fifth metatarsal.
5. Phalanges and sesamoids.

Astragalus.—These fractures are probably the most serious of all in their consequences; they are usually caused by falling and lighting on the foot stiff-legged; they may be caused by extreme dorsal flexion or during other severe traumas to the foot; they are often called sprain ankles.

Frequently there is no displacement. In such cases, if the fracture is recognized and the foot dressed in extreme flexion in molded plaster, there is likely to be slight, if any, permanent disability. Fractures or fracture dislocations of the body are much more serious and are caused by much more serious injuries to the surrounding parts.

*Read before the Section on Orthopedic Surgery at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

1. Bacon, J. D.: A Review of 3,473 Fractures, Southwestern Med., June, 1929.

In these cases, after careful roentgen studies, the patient should be anesthetized, and with the foot flexed at a right angle and the lower leg flexed at a right angle, the achilles tendon is relaxed and the fragments are molded into place.

If all efforts to obtain reasonably good reduction fail, there should be open operation with removal of one or

Fig. 2.—Fracture of the first phalanx of the great toe involving the joint. The condition remained undiagnosed until a roentgenogram was taken.

all of the fragments, if necessary. This is always a serious procedure, and if there is a surgeon near by who is well trained in such treatment, the patient should be transferred to him.

The earning capacity for laborers is reduced from 25 to 30 per cent except in the simple fractures of the neck. With this bad prognosis, these cases should be placed in the hands of an expert at the earliest possible moment.

Gray [2] estimates the average cost to industries for these injuries at $944. This certainly is a very low figure.

Inner Tarsals.—These bones, with the first, second and third metatarsals, forming the anterior part of the longitudinal arch, make fractures of the inner part of the foot second in seriousness only to those of the astragalus. This group, with the os calcis and astragalus

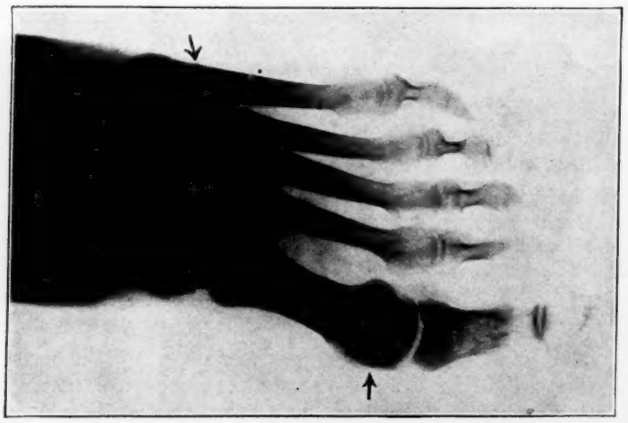

Fig. 3.—Fractures of the outer sesamoid of the great toe and of the neck of the fifth metatarsal from turning the foot while walking.

forming the weight-bearing part of the foot and giving the foot its elasticity, makes fractures of any of its component parts very important in their relation to the future function of the foot. The anterior pillar of the longitudinal arch is composed of the heads of the first, second and third metatarsal bones and the posterior pillar of the os calcis.

Fractures of the tarsal bones are quite infrequent except when associated with extensive fractures of the whole foot. However, fractures of the metatarsals are frequent, and the diagnosis depends on general points of diagnosis for fractures.

Fractures of the first, second and third metatarsals often have considerable displacement on either the dorsal or the plantar surface.

When these fractures are overlooked, there is likely to be depression of the longitudinal arch, painful pressure points and false weight-bearing lines with chronic foot, ankle, knee, thigh and pelvic strains.

The patient should be anesthetized and with traction on the front of the foot and counteraction at the ankle, the fracture should be molded into place as accurately as possible. It should be dressed with a plaster splint molded high up under the arch and reaching to just below the knee.

The special splint of Dr. George G. Davis [3] would appear to be of great value and is well worth referring to.

Fourth Metatarsal.—The diagnosis and the treatment of fractures of the fourth metatarsal are the same as

Fig. 4.—Multiple fractures of the phalanges. Three of these fractures were unrecognized until a roentgenogram was made.

in those of the first, second and third metatarsals. While the fourth metatarsal does not enter seriously into the longitudinal arch, any material displacement on either the dorsal or the plantar surface would cause disagreeable points of pressure and foot disability.

Fifth Metatarsal.—Because of its location and the attachment of its ligaments and tendons, this bone has a peculiar group of fractures quite independent of all the others. It is the one metatarsal in which the sprain and traction fractures occur.

Carp [4] states that "the exposed position of this bone is a predisposing factor for its injury by direct violence, such as a blow, a fall, striking the outer side of the foot against a hard immovable object, and by the wheel of a vehicle in motion. The indirect violence is usually a forcible inversion of the foot accompanied by weight bearing, through a fall, a jump, a sudden step on uneven ground or dancing."

Many articles have been written on fractures of this bone. The fracture occurs so easily that it is often overlooked, causing long disability and often nonunion. When soreness and localized tenderness occur about its head, it should be kept under constant suspicion regard-

2. Gray, R. N.: Disability and Cost of Industrial Fractures, J. Bone & Joint Surg. **10:** 27-39 (Jan.) 1928.

3. Described by Ellis, J. D., and Coulter, J. S.: The Management of Tarsal and Metatarsal Fractures, J. A. M. A. **91:** 81 (July 14) 1928.

4. Carp, L.: Fracture of Fifth Metatarsal Bone, with Special Reference to Delayed Union, Ann. Surg. **86:** 308-320 (Aug.) 1927.

less of whether or not there has been a recognized trauma.

Here again it is only necessary to recognize the condition and enforce rest and immobilization until union has occurred.

Phalanges and Sesamoids.—The phalanges of the foot are also fractured by the simplest sort of trauma; dropping something on the toe is the most frequent; stubbing the toe is probably next. Many of these fractures are not easily diagnosed and, like all the other groups of the foot, demand accurate roentgen information.

Many times a patient has gone round for weeks with a swollen toe, on which it has been impossible to wear a shoe, and to the chagrin of the surgeon a fracture of the phalanx or sesamoid finally is found.

While the sesamoid fracture is rather rare, it should always be thought of, as it causes a long period of painful walking.

Once we realize how easily a phalanx can be fractured, we shall be more likely to make roentgen diagnosis routine.

COMMENT

In our recent series of forty-six cases of fractures of the foot excluding the os calcis, there were twenty-

Fig. 5.—Sprain traction fracture of the head of the fifth metatarsal.

eight single and eighteen multiple fractures, and the incidence for the metatarsals was about equal except for the fourth, which was the smallest. There was one fracture of the astragalus, one of the cuneiform and two of the sesamoids.

When we consider forty-six days the average loss of time, as reported by the Industrial Accident Commission of Ohio, for a fracture of the metatarsal, and thirty-three days for the fracture of a phalanx, as reported by Davis,[5] and also recognize that these fractures are the most common of all, we can then realize the tremendous loss to labor and industry when disability is prolonged beyond the normal period because of the lack of proper diagnosis.

It has often been said that if we would take as much pains in the diagnosis and treatment of fractures of the foot as we do in fractures of the hand, the results would be greatly improved.

ABSTRACT OF DISCUSSION

DR. P. H. KREUSCHER, Chicago: These fractures are often due to indirect violence, and the pain experienced by the patient is much less than one would ordinarily expect. Furthermore, there is often little displacement, as an impaction without motion of the fractured ends frequently causes little discomfort. Fractures of the smaller bones of the foot are often overlooked, because the function of the foot does not depend on any one of the bones under consideration, with the possible exception of the astragalus. When one thinks of the bones of the foot as an arch held together by the plantar fascia, one can readily see that the stress on the injured bone is entirely different from that placed on any other bone in the body. The segmented sesamoids are often congenital and are discovered only in the roentgenogram made following injury. In fractures of the

Fig. 6.—Fracture of the third metatarsal. This case shows the importance of roentgenograms in two planes. In this film the fracture was not recognized.

astragalus it sometimes becomes necessary to do an astragalectomy. If following a simple fracture of the astragalus impingement occurs on the external or internal malleolus, this can readily be dissected away. In the treatment of fractures of the bones of the foot, I should like to emphasize two points: (1) immobilization, and (2) maintenance of the long and transverse arches of the foot.

DR. JOHN DUNLOP, Pasadena, Calif.: I should like to emphasize the fact that every injury of the foot that is at all questionable should be examined roentgenographically. In doing industrial work, I know that the one expense that the insurance companies do not mind is the money that is spent for roentgenograms, and not only original but subsequent roentgenograms are advisable and permissible. As to the reduction of fractures of the foot, I think that it is almost an impossible problem if there is much to be done. The molding of such a foot is the thing that we have to look to. If we preserve the weight-bearing in as nearly its normal line as possible, we have done about all that we can do in many of these comminuted cases. So far as fixation is concerned, I find that in a great many minor fractures of the foot, fixation is difficult. If we can improve the circulation of the part, put the patient on crutches, get active movement of the knees and keep him at rest and

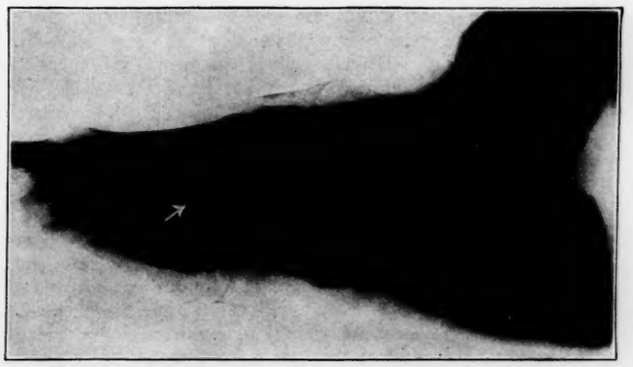

Fig. 7.—Fracture of the third metatarsal plainly visible in the lateral view.

with the limb in an elevated position the remainder of the time, we are going to get a quicker result than by putting the extremity in plaster and cutting down the circulation, thus bringing on the stiffness which we have to overcome.

DR. LEO S. LUCAS, Portland, Ore.: I should like to emphasize further the importance of molding plaster in the longitudinal and anterior arches. I think that in fractures of the metatarsal bones the plaster should be kept on for a sufficient period

5. Davis, P. A.: Fractures in Industry, J. A. M. A. **91**: 695-698 (Sept. 8) 1928.

to form a good, solid union. That usually takes from three to four weeks. Before the plaster is removed the patient should be allowed to be up and to bear weight on the plaster, and after the removal of the plaster, straight last shoes should be applied, instead of the bedroom slipper that most of them are allowed to wear. Again, there should be in this shoe a proper felt insole, which supports the longitudinal arch, as well as the anterior arch.

DR. WALTER G. STERN, Cleveland: I cannot quite agree with the authors as to the ease with which they diagnose fractures of the foot by means of the x-rays. I believe it will be within the province of the orthopedic surgeon in talking about and teaching fracture treatment to go back to some of the old and well tested methods of the past. When one of the famous painters of his time was asked how he got the wonderful results he did, what substance he mixed his colors with, he said, "With brains." Thus all fractures, and not those of the foot alone, must be diagnosed not with x-rays but "with brains." As we all know, x-rays are not infallible, and roentgenograms of the metatarsus are absolutely not infallible. I have collected a series of twelve primary roentgenograms which were negative for fractures. Yet roentgenograms taken from three to four weeks later plainly showed fractures of the metatarsals. It seems to me that there may be something peculiar about certain fractures of the metatarsus, so that they occasionally may not show early changes in the roentgenogram. How shall we tell our students and fellow practitioners to make diagnoses of fractures of the foot or elsewhere? By the three points that I called attention to more than fifteen years ago, of which the first is localized, sharp pain located over the bone, which I call pencil tenderness, because if one applies the rubber end of a lead pencil to it, it will best demonstrate the area. The second point is local swelling, confined more or less to the tender area, and finally local, bloody discoloration in the same area. These three points are not caused by anything else. So one can make a diagnosis of fracture many times in the face of poor roentgenograms or none at all, on the basis of these clinical observations. I did not hear discussed in the paper the complications of fractures of the foot. There are some very serious complications in minor fractures of the foot, namely, disturbances of the circulation, to which American surgeons and physicians pay altogether too little attention; they are known to the Germans by the euphonious name metatraumatic vasomotor angiotrophoneurosis, which I shortened a number of years ago to the more common angiotrophosis. This condition is very common. There is residual swelling, discoloration, cyanosis, and clammy sweating of the foot in a large proportion of the cases. There are also such complications as contractures and hammer-toes following minor fractures.

DR. THOMAS A. STODDARD, San Francisco: I should like to suggest one thing that I have found of great use in the after-treatment of these cases when the fixation apparatus has been removed. I use what I call a foot glove, two pieces of leather sheeting around the foot, inside of which one puts felt for the sake of supporting the anterior arch. This can be modified, depending on the swelling, and can be worn in any sort of slipper.

Pain and Abdominal Disease.—In 90 per cent of all disease, pain is a prominent symptom at some point in its course. Pain is by far the most prominent symptom in all abdominal disease. It is the thing most dreaded by the patient and the thing more than any other that will cause him to seek medical aid. Its intensity, location, radiation, persistency and relation to other symptoms will often alone point to a correct diagnosis. The cessation of pain in abdominal disease is always welcomed by the patient, but, instead of being a favorable omen, it often indicates a grave prognosis. Pain is the most valuable sign to the abdominal surgeon, and, given but one symptom upon which to make a diagnosis, he would invariably select pain. Pain in the abdomen does not always mean abdominal disease, but, on the other hand, abdominal disease almost invariably means pain. In fact, a diagnosis of any acute abdominal condition with no pain is always to be regarded with suspicion.—Wallingford, W. H.: Acute Abdominal Pain, *Virginia M. Monthly*, December, 1929.

COMPRESSION TECHNIC IN GASTRO-DUODENAL ROENTGEN DIAGNOSIS *

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It has aptly been said that the greatest obstacle to accurate diagnosis of intra-abdominal conditions is the abdominal wall. That efforts are being made to overcome this obstacle is evident when one sees the proctologist with his 32-centimeter sigmoidoscope exploring the lower region of the intestinal tract and the gastroscopist searching for pathologic conditions within the stomach. If the ambitions of these specialists could be realized, there would be no need for this presentation. However, between the domain of the proctologist and that of the gastric endoscopist there lies a considerable area, largely unmapped and uncharted. Roentgenology has stepped in to bridge the gap left by the endoscopist. That it has been successful to a large degree is evident from the

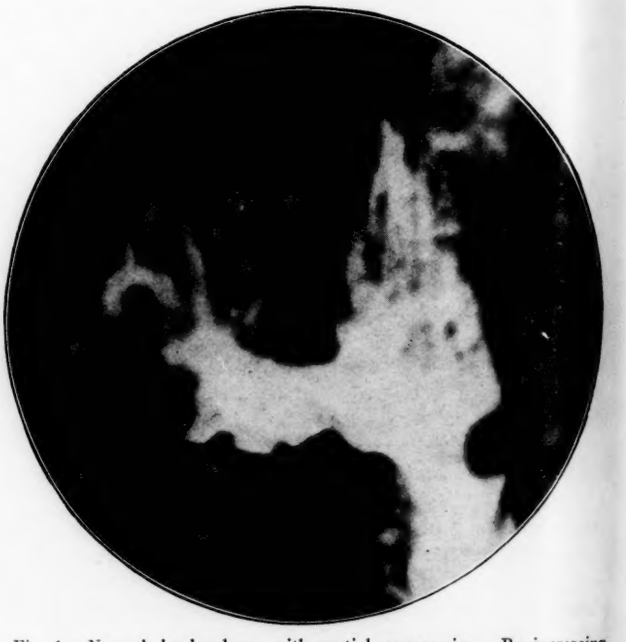

Fig. 1.—Normal duodenal cap with partial compression. By increasing the compression, the mucosal folds can be more definitely demonstrated.

rôle which gastro-intestinal roentgenology holds today. Few physicians or surgeons would willingly practice their profession without this most valuable diagnostic aid. This year marks the twenty-fifth anniversary of the beginning of modern gastro-intestinal roentgen examination, and it is fitting that brief mention be made of some of the men who have contributed to our present knowledge.

In 1904, Rieder [1] introduced large quantities of bismuth subnitrate into the human stomach as a means of studying the gastro-intestinal tract roentgenographically. Not only did he revolutionize gastro-intestinal roentgen examination but he foretold many great possibilities for roentgen study of the gastro-intestinal tract by this method. Other men were quick to realize the advantages of this method of examination, and many contributions followed.

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* From the Department of Medicine, the Duluth Clinic.
* Read before the Section on Gastro-Enterology and Proctology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.
1. Rieder, H.: Radiologische Untersuchungen des Magens und Darmes beim lebenden Menchen, München. med. Wchnschr. **51**: 1548-1551, 1904.

Reiche,[2] in 1909, established certain important diagnostic principles in the diagnosis of gastric ulcer. He proved from his roentgen and necropsy studies that: (1) a pouchlike projection on the lesser curvature of the stomach was diagnostic of gastric ulcer; (2) a gastric ulcer would cause a disturbance in gastric motility resulting in delayed emptying of the stomach, and (3) the actual size of the ulcer did not correspond to the apparent size on the roentgenogram.

Haudek,[3] in 1910, popularized the roentgen diagnosis of gastric ulcer by his careful roentgen studies and verification of his diagnosis by the surgeon or pathologist. In the same year he corroborated Reiche's finding of a marked disturbance of gastric motility in cases of ulcer not involving the pylorus. Two years later Haudek[4] established two important points in the diagnosis of duodenal ulcer: (1) the presence of the niche as a specific sign of ulcer, and (2) distortion of the duodenal bulb either by spasm or by contracture. He also observed many of the indirect signs which are of lesser importance.

Fig. 2.—Duodenal ulcer on the posterior wall of the cap. Without compression, the bulb filled completely and assumed practically a normal outline.

Baron and Barsony[5] observed a spastic hour-glass stomach in cases of duodenal ulcer and without evidence of organic disease in the stomach itself.

During this time, Cole[6] was studying serial roentgenograms and showing that a persistent defect in the duodenal bulb and in the stomach outline, in a series of roentgenograms, was diagnostic of organic disease.

Forssell[7] made a distinct advance by his roentgen studies of the gastric mucosa. This method has been further elaborated by others, including Rendich[8] and Case,[9] in the study of normal and pathologic states.

2. Reiche, F.: Zur Diagnose des Ulcus ventriculi im Röntgenbild, Fortschr. a. d. Geb. d. Röntgenstrahlen **14:** 171-173, 1909.
3. Haudek, M.: Zur röntgenologischen Diagnose der Ulzerationen in Pars media des Magens, München. med. Wchnschr. **57:** 1587-1591, 1910.
4. Haudek, M.: Personal communication to the author.
5. Baron, A., and Barsony, T.: Spastischer Sanduhrmagen bei duodenalen Affektionen, Wien. klin. Wchnschr. **25:** 1185-1187, 1912.
6. Cole, L. G.: The Diagnosis of Postpyloric Ulcer by Means of Serial Radiography, Lancet **1:** 1239-1244, 1914.
7. Forssell, G.: Personal communication to the author.
8. Rendich, R. A.: Roentgenographic Study of Mucosa in Normal and Pathologic States, Am. J. Roentgenol. **10:** 526-537 (July) 1923.
9. Case, J. T.: Gastric and Duodenal Roentgen-Ray Findings After Operation, J. A. M. A. **85:** 1385-1389 (Oct. 31) 1925.

Carman[10] emphasized the importance of manual compression in the visualization of pathologic conditions situated on the anterior or posterior walls of the stomach or cap.

Åkerlund[11] has made valuable contributions (1) by his careful studies and analysis of the evidence in duodenal ulcer and (2) the use of compression in gastroduodenal studies.

Fig. 3.—Duodenal ulcer on the posterior wall with compression; taken in the right anterior oblique position. Note the apparent swelling of the mucosa surrounding the crater.

The latter phase has also been developed to a high degree by Berg.[12]

Fig. 4.—Penetrating ulcer on the lesser curvature of the stomach near the angularis. The size of the creater and the surrounding changes can be demonstrated much more clearly than by complete filling without compression.

Many others have added valuable information and have contributed to the present status of our knowledge.

10. Carman, R. D., and Sutherland, C. G.: The Duodenal Niche, Am. J. Roentgenol. **16:** 101-106 (Aug.) 1926.
11. Åkerlund, Å.: Die Röntgendiagnostik des Ulcus duodeni mit Hinsicht auf die lokalen "direkten" Röntgensymptome, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **36:** 577-590, 1923; Later Experiences Concerning the Niche Diagnosis in Cases of Duodenal Ulcer, Acta radiol. **8:** 538-545, 1927.
12. Berg, H. H.: Personal communication to the author.

In this country there appear to be among gastrointestinal roentgenologists three distinct groups. The first depends entirely on serial roentgenography, while the second maintains that roentgenoscopy is the most accurate means of diagnosis. The third group combines the two methods.

Incomplete filling and visualization of the gastric and duodenal mucosa is used by comparatively few men,

Fig. 5.—Ulcer near the middle of the greater curvature. Note the apparent depth of the crater due to the swelling of the mucous membrane surrounding it.

and the compression technic, so highly developed by Åkerlund in Stockholm and Berg in Berlin, is comparatively unknown in this country. Stimulated by the high degree of accuracy in gastroduodenal diagnosis evidenced in the clinics of Åkerlund and of Berg, I have introduced their method, with some modifications, in our routine gastroduodenal roentgen examinations. After almost a year's experience with this method we are firmly convinced that it has distinct merit.

Comparison of the results obtained by complete filling without compression with those of partial filling with compression indicates that the latter method has much to recommend it. The results obtained in ulcer of the duodenum, pylorus, lesser and greater curvatures of the stomach, as well as the anterior and posterior walls, have been especially gratifying (fig. 1-5); likewise, the demonstration of diverticula in the stomach or duodenum has been facilitated (fig. 6). In postoperative cases, in which gastro-enterostomies or partial resections have been made, it brings out details that cannot be obtained by any other method (fig. 7).

While this method is especially applicable in the demonstration of early lesions, it also gives a clearer picture of more advanced cases. It is true that the well trained roentgenoscopist, by a combination of the direct and the indirect methods, can attain a high degree of accuracy in gastroduodenal diagnosis, but even for him the actual demonstration of direct evidence of pathologic conditions is frequently difficult. If presumptive evidence of disease can be replaced by direct evidence, there will be greater confidence in the results obtained. It is known that fluoroscopy of the chest will demonstrate a high percentage of pathologic changes, but who would discard the more concrete evidence of the roentgenogram?

TECHNICAL PROCEDURE

The apparatus used consists of a motor driven fluoroscopic and roentgenographic unit. This contains a tube suitable for fluoroscopy and roentgenography. Immediate change from fluoroscopic to roentgenographic study is accomplished by depression of a pedal at the side of the unit. The combined compression device and serialograph is suspended by counterweights and is quickly attached to the tube carrier whenever indicated.

The usual procedure consists in giving the patient from 1 to 2 ounces of barium mixture and visualizing the stomach and duodenum under the fluoroscopic screen. Manual palpation and compression, as well as changing the position of the patient, are used to visualize, as far as possible, the gastric and duodenal mucosa. Roentgenography can be accomplished in any position with the greatest rapidity and ease.

For more careful study of suspected areas the compression serialograph is attached, and the desired compression obtained under direct fluoroscopic vision, by means of the small movable fluoroscopic screen.

When the desired compression has been obtained the casette and the screen are quickly moved and the exposure is made. By shifting the fluoroscopic screen and turning the casette, four exposures are obtained on an 8 by 10 film (fig. 8). In indicated cases, a complete filling of the stomach is done, after this procedure, and the usual method of examination is followed.

PRECAUTIONS AND ADVANTAGES

Precautions.—1. Compression must be carefully applied to avoid excessive pressure.

Fig. 6.—A diverticulum of the descending portion of the duodenum.

2. Care must be exercised to avoid interpreting normal variations in the mucous membrane as pathologic.

Advantages.—The advantages of this method might be summarized as follows:

1. It demonstrates more clearly the usual lesions, giving a better conception of the type of lesion, extent of involvement and the treatment indicated in gastrointestinal disease.

2. It demonstrates early or small lesions that are not visualized by the ordinary technic.

3. It permits visualization of the anterior and posterior walls of the stomach and duodenum, as well as the marginal outline.

4. It gives a truer picture of the size, shape and position of the stomach.

Fig. 7.—A gastrojejunostomy showing the gastrojejunal ostium.

5. It enables roentgenography under almost direct visualization.

6. Less barium is used, decreasing the danger of perforation, lessening the discomfort of the patient and obviating largely the lower bowel disturbance frequently seen following gastro-intestinal roentgen examinations.

7. When indicated, complete filling and the indirect method can be combined with the direct.

8. It obviates the necessity of numerous large roentgenograms, resulting in economy of material and lessened cost to the patient.

CONCLUSIONS

1. The compression method increases the accuracy of gastro-duodenal roentgen diagnosis.

2. It permits the demonstration of direct evidence of disease in a higher percentage of cases.

3. It enables a more intelligent interpretation of the lesions present and a better understanding of the treatment indicated.

ABSTRACT OF DISCUSSION

DR. P. M. HICKEY, Ann Arbor, Mich.: Williams of Boston, in his book published in 1899, gave diagrams of some lesions of the stomach revealed by the test meal. Of course he was antedated by Cannon in his famous physiologic experiments, Cannon being, I think, the first one in the world to use bismuth in the study of the gastro-intestinal tract. The great difficulty in clearness of investigations of the abdominal organs is the problem of scattered radiation; that is, as the direct rays strike the internal organs they give off secondary rays which tend to blur the plate. There are two methods for the suppression of those: first, the limitation of the area examined by means of a cone or cylinder and, second, the use of a movable grid, which was brought out first by Dr. Buckey and afterward perfected by Dr. Potter. In this work the combination of the two methods has resulted in a somewhat more precise technic. This was beautifully illustrated by Dr. Boman's lantern slides. It is unfortunate that in this country the manufacturers have not contributed to this work by following along the methods used by Åkerlund and Berg. In fact, I was impelled, after I saw Berg's work, to make use of a crude home-made piece of apparatus. I quite agree with the author that the better the plates or films, the more accurate the diagnosis. It is necessary, however, in looking at these films to relearn the art of interpretation of stomach films; otherwise a little barium in one of the mucosal folds may be interpreted as a slight ulcer. That, possibly, is a theoretical objection; but one has to work with a method for some time and become familiar with the appearance before one should give positive conclusions.

DR. ROBERT R. NEWELL, San Francisco: I am a little bold in accepting the invitation to discuss this paper because I have not used the compression technic on the partly filled stomach, as Dr. Boman uses it. Let me start out by admitting that my gastro-intestinal diagnosis is not satisfactorily precise. I, for one, am ready to welcome any method that adds to the accuracy of the roentgenologic examination of the gastro-intestinal tract. I am one of Dr. Boman's third group. I would not do without roentgenoscopic examination and I would not do without film examination. I must have both. It is my practice to see the patient first with the stomach empty and without any previous barium meal. At this first visit I study the stomach and duodenum with an opaque meal. Then in six hours I see the patient again to note the gastric emptying time. Before seeing the patient at the six hour visit I study the films made at the first examination and then, if any question arises (and a question often does arise) I can make a second immediate examination with another meal and do it more intelligently because I have in mind the specific questions which have been brought up in the case by a combination of roentgenoscopy and film study. Dr. Bowman's method, examining the partially filled stomach under compression, can well be considered as a supplementary method, to be added to the more usual examination with the stomach full. I would not care to use it to the exclusion of the latter method. The brilliant profile which one obtains by filling the stomach or duodenum must remain an important element in the complete examination.

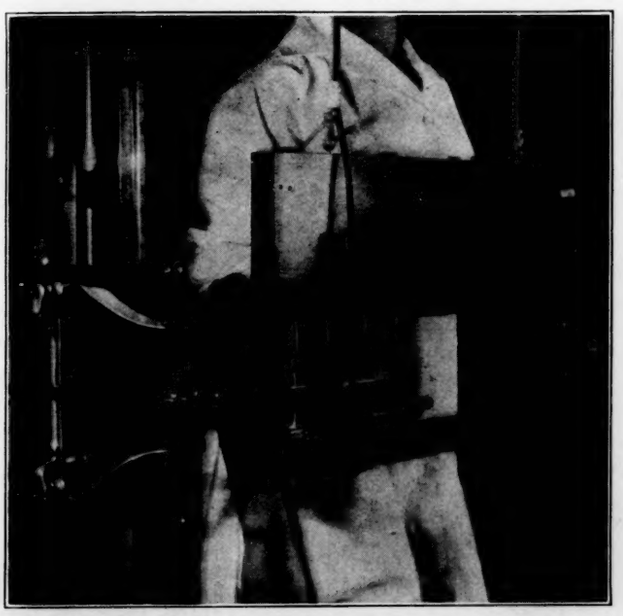

Fig. 8.—Combined serialograph and compression device attached to the tube carrier of the combined fluoroscopic and roentgenographic unit.

DR. MARTIN G. VORHAUS, New York: I should like to know how many of the cases demonstrated in the lantern slides were proved at operation or necropsy.

DR. GEORGE B. EUSTERMAN, Rochester, Minn.: From some quarters has come the criticism that the method is not without danger, particularly in the hands of those who are not well

initiated into it. That danger is the danger of perforation. How real a menace is that?

DR. P. G. BOMAN, Duluth, Minn.: With regard to the number of cases that have been proved at operation: The cases of gastric ulcer on the lesser curvature, the greater curvature, the pylorus, the posterior wall, with the exception of the one high up on the posterior wall, and approximately 50 per cent of the duodenal ulcers have been proved at operation. I have particularly made it a point to study the specimens with reference to the mucous membrane change surrounding the ulcer and comparing this with the appearance of the roentgenogram. I do not profess at all to be an expert in this type of diagnosis. After seeing the work done by Åkerlund and Berg, I feel like a novice. I do feel, however, that it has improved the accuracy of gastric duodenal diagnosis. With regard to Dr. Eusterman's reference: About a year ago I reported a series of five cases of perforation following gastroduodenal roentgen examinations. Since the introduction of the compression technic I have not had a case of perforation, nor has there been any indication that I might have one. As I mentioned under "precautions," one must use care in the amount of compression used, especially in certain cases. I believe that there is a potential danger if great compression is applied in the penetrating type of ulcer.

PRIMARY CARCINOMA OF THE URETER *

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The rarity of primary neoplasms of the ureter and the great difficulties offered to accurate diagnosis, especially in the case presented here, has stimulated me to review the reported cases and to present data which, I hope, will aid in the early diagnosis of this condition. Early treatment is necessary to save the lives of these patients, since these tumors have widespread and rather early metastases.

There is no symptomatology that is of any special aid in the diagnosis of this condition. A review of the literature on this subject discloses that the diagnosis of fifteen of these cases was made at the autopsy table; in only eight or nine clinical cases was the true condition suspected, and in only three cases was the diagnosis made before operation.

The first case report, that of Wiesing and Blix,[1] was made in 1878, and not until that of Davey,[2] in 1884, was it again mentioned in the literature. The first summarizing report of Richter,[3] in 1909, disclosed eleven cases. Since that time reviews have been made at intervals by Spiess,[4] 1915; Judd and Struthers,[5] 1921; Meeker and McCarthy,[6] 1923; Kretschmer,[7] 1924, and the last summarizing report by Richard Glas,[8] in 1926.

Meeker and McCarthy reported thirty-three cases, including their own. However, it is necessary to eliminate that of Hoffman, as it is a duplicate of a case demonstrated by Finsterer[9] in 1915. Thus, Meeker and McCarthy reported thirty-two cases, to which must be added that of Papin[10] in 1923, Zobel[11] in 1923, Kretschmer[7] in 1924, Mraz[12] in 1924, Crance and Knickerbocker[13] in 1924, Paul Blatt[14] in 1926, Richard Glas[8] in 1926, Posner[15] in 1927, Scheele[16] in 1927, Player[17] in 1928 and Volante[18] in 1928, making a total of forty-three cases of primary malignancy of the ureter, to which I add the following:

A white man, aged 45, an official, was referred, Oct. 14, 1925, by Dr. Robert M. Moore, because of low function and microscopic hematuria. The family history was irrelevant. For five months the patient had suffered from headaches and general malaise, which sent him to Dr. Moore for a general examination.

Dr. Moore found him to be asthenic and slightly obese. The patient had not had any physical exercise for twenty years, because of some roentgen burns to the feet. The roentgen treatment had been administered for some type of skin condition.

Lines converging to *A* indicate extent of ureteral carcinoma. Note hydronephrotic pelvis and calices.

The patient reported that his appetite and his habits were good, with the exception of a very small intake of fluids. He had nocturia one or two times. His nose, throat and eyes were pronounced normal by an ophthalmologist and a nose and throat specialist. The head, neck and chest were normal. The apex beat of the heart was heard at the fifth interspace along the nipple line, and no murmurs were heard. The abdomen was normal except that it was easy to palpate the lower pole of the left kidney, which did not seem enlarged. The extremities were normal except for the old roentgen burns on the feet.

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* Read before the Section on Urology at the Eigthieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

1. Wiesing, J. P., and Blix, C.: Cancer of Ureters, Hygiea **60**: 468-476, 1879.
2. Davey, R.: Excision of Left Kidney, Brit. M. J. **2**: 757-758, 1884.
3. Richter, J.: Carcinome primitif de l'urétère droit, Ztschr. f. Urol. **3**: 93, 1909.
4. Spiess, P. D.: Die primar epithel. Tumoren des Nierenbeckens und des Ureters, Centralbl. f. allg. Path. u. path. Anat. **26**: 553-618, 1915.
5. Judd, E. S., and Struthers, J. E.: Primary Cancer of Ureter: Review of Literature and Report of Case, J. Urology **6**: 115 (Aug.) 1921.
6. Meeker, L. H., and McCarthy, J. F.: Primary Carcinoma of Ureter: Report of Case with Review of Literature, J. A. M. A. **81**: 104-109 (July 14) 1923.
7. Kretschmer, H. L.: Primary Carcinoma of Ureter, with Report of Case and Review of Literature, Surg. Gynec. Obst. **38**: 47-51 (Jan.) 1924; J. Urology **11**: 573-579 (June) 1924.
8. Glas, Richard: Primary and Metastic Carcinoma of Ureters, Wien. klin. Wchnschr. **39**: 1145-1149 (Sept. 30) 1926.
9. Finsterer: Ein Tumor des linken Ureter, Wien. klin. Wchnschr. **27**: 718, 1915.
10. Papin: Néoplasme de l'urétère, J. d'urol. **17**: 325.
11. Zobel, O. H.: Zentralbl. f. Path. u. path. Anat., 1925; Leipzig, 1923.
12. Mraz, J. Z.: Primary Carcinoma of the Ureter, J. Urology **12**: 49 (July) 1924.
13. Crance, A. M., and Knickerbocker, H. J.: Primary Carcinoma of Ureter: Report of Case, J. A. M. A. **82**: 1930-1932 (June 14) 1924.
14. Blatt, Paul: Surgery of Ureteral Carcinoma, Wien. klin. Wchnschr. **39**: 1130-1132 (Sept. 30) 1926.
15. Posner, H. L.: Primäres Ureterkarzinom (Primary Carcinoma of Ureter), Monatschr. f. Geburtsh. u. Gynäk. **75**: 86-90 (Nov.) 1926.
16. Scheele, K.: Beitrag zur Röntgendarstellung des primären Ureterkarzinoms (Contribution to the Roentgen Picture of Ureteral Carcinoma), Fortschr. a. d. Geb. d. Röntgenstrahlen **36**: 825-828 (Oct.) 1927.
17. Player, L. P.: Urol. & Cutan. Rev. **32**: 7 (July) 1928.
18. Volante, F.: Primary Carcinoma of the Ureter, Arch. Ital. di urol. **4**: 105-132 (Dec.) 1927.

Examination of the nervous system showed that the pupils and knee jerks were normal; there was no Babinski reflex. The Wassermann reaction was negative. Chemical analysis of the blood was normal.

Cystoscopy showed a normal bladder, but the catheter on the left side was obstructed at 20 cm. and no urine could be obtained. The urine flowed freely from the right kidney.

A roentgenogram of the kidneys, ureters and bladder did not show any stones. The left kidney seemed slightly larger than the right. An attempted pyelogram of the left side showed opaque fluid running back along the ureteral catheter from the point opposite the transverse process to the third lumbar vertebra. A tentative diagnosis of stricture at the ureteropelvic junction was made. Repeated attempts at dilation all failed and, each time that the ureteral catheter was passed to this obstruction, hemorrhage followed which was considerably more than one would expect from traumatism of ureteral stricture.

My conclusions were that I was dealing with a probable ureteral tumor or a renal and ureteral tumor, and an operation was recommended.

Jan. 19, 1926, through a lumbar incision a retroperitoneal nephrectomy was done. On liberation of the adhesions around the kidney pelvis, a mass was found in the ureter just below the pelvis, which was about as thick as an index finger. Owing to the fact that in a previous case of papilloma of the renal pelvis it was necessary at a later date to do a ureterectomy, the ureter was liberated and sectioned about one-half inch above the bladder. During the operation no evidence of extension was found and the wound was closed around a rubber drain; the patient returned to his bed in good condition. The following day evidence of circulatory failure appeared and the patient died on the third day following the operation, with a diagnosis of circulatory failure. An autopsy could not be obtained.

Examination of the specimen showed a papillary carcinoma in the upper third of the ureter, without any evidence of metastases or implantations along the ureter, as so frequently occurs in papillomatosis of the kidney pelvis. Near the lower end of the ureter was a contraction, which clinically seemed to be a stricture and which had caused some difficulty in the passing of a catheter into the ureter during the treatment stage.

Of the forty-three patients, twenty-one were females and twenty-two males. The oldest patient was 89 (Troupet-Guéniot [19]), the youngest 35 (Finsterer [9]), and one patient was 80 (Richter [3]). There were three patients from 70 to 79, twelve from 60 to 69, nine from 50 to 59, eleven from 40 to 49 and four from 35 to 39.

The right ureter was involved in nineteen cases and the left ureter in twenty-four cases. The neoplasm was reported in the upper ureter in five cases, lower ureter in twenty-seven cases, middle ureter in six cases, diffuse in one case, center and lower in one case, multiple in one case, and entire in one case, that of McCarthy.

TYPE OF TUMOR

The papillary type of carcinoma is the most common, as has been found in carcinoma of the kidney pelvis, there being twenty-one cases. Squamous cell carcinoma was reported five times; medullary carcinoma, two times (Kretschmer reports medullary carcinoma in five of the thirty-five cases reported), and carcinoma solidum, two cases, the remainder being reported simply as nonpapillary carcinoma. The size of these tumors was given as that of a cherry, walnut, pigeon egg, finger and thumb. In one instance it was reported as having filled half of the pelvis (Hektoen [20]).

In the data reviewed, I was able to find the report of calculus three times, but Kretschmer [7] found five cases in which stone was reported, those of Davey,[2] Metcalf and Stafford,[21] Paschkis [22] and Zironi.[23]

The degree of malignancy in this condition is illustrated by the finding of its extension to the rectum, seminal vesicles, sacrum and vagina, one case each. It extended to the bladder in six cases. Schmitt's [24] case showed involvement of the eleventh dorsal vertebra; the case of Spiess [4] showed involvement of the third lumbar; Adler's [25] case showed metastases in the fourth lumbar vertebra; Hektoen's [20] case showed the intersurface of the ilium eroded; metastases were found in the liver in seven instances; in the lung in four cases; in the pararectal glands in one instance, and in the retroperitoneal glands in six cases.

The duration of symptoms from the cases reviewed was from five weeks to fourteen years. Hematuria was the most common symptom, it being reported thirty-one times, and as a number of these cases were found at autopsy, it is possible that the symptom of hematuria may have been overlooked in the report. Kretschmer states that Adler,[25] Van Chapellan,[26] Hektoen, Toupet and Guéniot,[19] Wiesing and Blix [1] make definite mention of the absence of hematuria in their cases.

Pain, the next most common symptom, was described as being in the kidney, sacrum, hip, thigh, diffuse abdominal, one-sided abdominal, upper and lower abdominal, and the inguinal region. Thus, it may be seen that there is nothing characteristic about the symptom pain that could be of much assistance in the diagnosis.

Tumor was reported as having been felt eighteen times, whereas final analysis showed hydronephrosis reported thirty-two times. The clinical diagnosis of tumor of the ureter was made in nine of the forty-three cases. Other clinical diagnoses were tumor of the rectum, cystitis, calculus, obstruction of the ureter, stricture of the ureter and various types of renal neoplasm. It will be seen that accurate diagnosis from the history and ordinary physical examination is practically impossible. The cystoscope revealing papilloma protruding from the ureter orifice has been helpful. This occurred in the cases of Gerstein,[27] Finsterer,[9] Paschkis,[22] Judd,[5] Meeker,[6] Posner [15] and Player.[17] The fact that rather profuse bleeding occurs from the catheter in meeting an obstruction in the ureter also is a strong indication of a possible ureteral tumor in case stone can be eliminated.

Unfortunately, the x-rays may not give much assistance since, in the majority of instances, as in my own case, there was a complete occlusion and reflux of the pyelographic mediums along the ureter. Roentgenograms in these cases have been interpreted as defects in the ureterogram, stenosis of the ureter, hydronephrosis and, in Aschner's [28] case, calculi of the kidney. Other clinical diagnosis, such as pyonephrosis, carcinoma of the kidney and papilloma of the kidney, have been made. It seems to me that anything like an accurate diagnosis will be reached, as in my own case, only by exclusion.

19. Troupet and Guéniot: Cancer de l'orifice ureteral du bassinet et de l'uretère, Bull. Soc. anat. de Paris **73**: 678, 1898.
20. Hektoen, Ludvig: Medicin, June, 1899; abstr. Rev. d. sc. méd. de Hayem, 1896, p. 650.
21. Metcalf and Stafford: Carcinoma de l'uretère avec un calcul logé dans la portion pelvienne, Am. J. M. Sc., January, 1912.
22. Paschkis, R.: Primärer Tumor des Harnleiters, Wien. klin. Wchnschr. **23**: 361, 1910.
23. Zironi, G.: Cancer primitif de l'uretère droit, Ann. d. mal. d. org. génito-urin. **1**: 81, 101, 1909.
24. Schmitt, E. C.: Primary Carcinoma of Ureter, J. Cancer Res. **1**: 461 (Oct.) 1916.
25. Adler, L.: Beitrag zur Kenntniss der primären Tumoren des Ureters, Monatschr. f. Urol. **10**: 120-142, 1905.
26. Van Chapellan: Carcinom des Ureters, Beitr. z. klin. Chir. **99**: 138, 1916.
27. Gerstein, K.: Ein Fall von primären Krebs der rechten Ureterenmundung, Inaug. Diss., Kiel, May, 1902.
28. Aschner, P. W.: Primary Tumors of the Ureter, Surg. Gynec. Obst. **35**: 749 (Dec.) 1922.

My patient was practically symptomless, afebrile and with no history indicative of pyelitis or urinary infection. Repeated roentgenograms of the kidney, ureter and bladder certainly eliminated stone and showed the ureter without kink as far as the catheter reached, also a normally shaped kidney. There was no history of tuberculosis, and a clean bladder mucosa was found. Free hemorrhage was produced by ureteral catheterization, such as one would not suspect from manipulation of a kink or stricture. Finally, the fact that I [29] had had a case of papillary epithelioma of the kidney pelvis with secondary implants in the ureter which bled freely led me to the conclusion that I had such a case, involving the ureter, producing obstruction with a possible kidney pelvis involvement.

The treatment in most instances has been nephro-ureterectomy. Involvement of the ureter orifice will require removal of a surrounding block of bladder wall. Papin [10] in his case resected and joined the severed ends of the ureter with circular stitching. Such repair is liable to stricture formation, and Legueu suggests the implantation of the central end into the bladder, if possible, when resection is feasible. In view of the fact that papillomatous tumors are prone to metastasize by implants below the original level, total ureterectomy would seem advisable when this type of tumor is encountered.

In summing up, it would seem that primary carcinoma of the ureter is a disease that is rare, its vague symptomatology making diagnosis difficult. One should keep this condition in mind in the meeting of obstruction in the ureter. It should be treated early, since metastases are frequent and widespread.

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ABSTRACT OF DISCUSSION

DR. F. P. JOHNSON, Portland, Ore.: The rarity of ureteral tumors is striking when compared with those of the bladder and renal pelves. It is interesting in this connection to note that embryologically the renal pelves, ureters and vesical trigon, being derivatives of the wolffian duct, are mesodermal in origin, while the remainder of the bladder and the greater portion of the urethra, derivatives of the allantois, are of entodermal origin. Certainly tumors of the walls of the bladder and the urethra are far more common than primary growths of the trigon, ureters and renal pelves. It would seem, therefore, that the entodermal epithelium is more susceptible to tumor formation than that of the mesodermal. Functionally there is this difference: the bladder epithelium undergoes a greater degree of stretching, there being a certain slippage of cells, one over the other, on distention of this organ. The ureter, being supplied with longitudinal folds and not serving the purpose of a reservoir, under normal conditions never distends to the extent of flattening its epithelium. The renal pelvis, however, not being supplied with folds, and serving the purpose of a reservoir to some extent, probably lies between the bladder and the ureter in this respect. The existing relative frequency of these tumors is established from this point of view. It is again established if infection is considered as an etiologic factor, for we must admit the greater frequency of cases of cystitis, followed next by pyelitis and last by ureteritis. Finally, the total surface area of the epithelial lining of the renal pelves, ureters and bladder may be considered as a possible explanation. A bladder distended to 500 cc. has approximately 302 square centimeters of area; two ureters each 27 cm. long and dilated to 5 mm. have a surface area of 84 square centimeters, and two normal renal pelves have approximately 78 square centimeters. This is a ratio of bladder to renal pelves to ureters of 100 to 28 to 26. As this would lead us to expect four bladder tumors to one each of the renal pelvis and ureter, we may discard this idea at once as being inadequate for the explanation of the rarity of renal pelvis and ureteral tumors.

DR. B. A. THOMAS, Philadelphia: During the past year we have had an opportunity to study and operate on two patients with so-called malignant papilloma of the lower end of the ureter. The first patient, a man, consulted us because of hematuria, and cystoscopy revealed a papilloma about 3 cm. in diameter, overlying and partially obstructing the ureteral orifice. After two or three fulgurations, all visible evidence of the tumor was destroyed, displaying a somewhat enlarged ureteral orifice. Three months later the patient reported in accordance with instructions, and again cystoscopy revealed a reformation of the tumor, growing apparently from the ureteral orifice, but not as large as previously. This led us to suspect the presence of tumors of the upper urinary tract, and ureteropyelographic examination showed a tumor the size of a pigeon's egg occupying the lower end of the ureter about 3 cm. above the orifice. The upper ureter and kidney showed no filling defect. Accordingly, the bladder and lower end of the ureter with the tumor were resected and the ureter was reimplanted in the bladder. Subsequently the patient developed a pyelitis, then a pyelonephritis, necessitating a secondary nephrectomy, following which he has been symptomless and has regained his former health. The second patient was also a man, complaining of hematuria. Cystoscopy revealed the elimination of bloody urine from one ureter. Bilateral ureteropyelography revealed a filling defect of the lower end of the ureter, near its juncture with the bladder. No other filling defects were apparent higher up in the ureter or kidney. Again the bladder and lower end of the ureter were resected on the affected side and the ureter was reimplanted in the bladder. This time no complications arose, and the recovery was uneventful. In these cases there is always the possibility, in the presence of cystitis, of an ascending infection up the implanted ureter, which may result in a kidney condition requiring surgery and necessitate secondary nephrectomy; or the ureterovesical anastomosis may break down, resulting in a suprapubic fistula, requiring either further transplantation of the ureter or nephrectomy. In the matter of diagnosis, it is imperative to determine whether there is any tumor higher up in the ureter or kidney. If this is the case, nephro-ureterectomy and partial resection of the bladder constitute the operation to be done. In other cases, typified by the cases cited, in which the tumor is limited to the vesical portion of the ureter, resection of the ureter and bladder and reimplantation of the ureter into the bladder is the operation to be performed, although secondary nephrectomy may become necessary.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: It is peculiarly fitting that Dr. McCown should bring up the subject of tumors of the kidney and ureter for discussion before this section, since it was about six years ago that he read a paper before this section on tumors of the renal pelvis. Up to that time pelvic tumors had been considered something of a rarity, but after the publication of his paper many cases were described and I have no doubt that this paper will call forth reports of many tumors of the ureter which have escaped the facile pens of urologists in the past. The clinical diagnosis of ureteral tumor may be quite difficult. It will first be necessary to differentiate between tumor of the ureter and the various other conditions which may cause ureteral obstruction, such as stone, blood clots, stricture, ureteral granuloma, papillomas and metastases from renal neoplasms. Primary tumors of the ureter occur more frequently in the lower third than in the upper. The clinical recognition of tumors in the upper ureter may be difficult when occlusion of the lumen is complete. If there is sufficient space in the ureter to permit the ureterogram to outline the filling defect, the character of the deformity may permit of recognition. With direct catheterization the character of the obstruction met by the ureteral catheter may be suggestive of neoplasm. The catheter coming in contact with the neoplasm will frequently cause a marked degree of hematuria. The urogram may be quite normal save for a moderate degree of sacculation of the lower ureter at the site of the tumor and to our surprise the upper portion of the ureter and pelvis may be practically normal, save possibly for minor dilatation confined to the calices. Localized filling defects without any other

29. McCown, P. E.: Papillomatous Epithelioma of the Kidney Pelvis, J. A. M. A. 75: 1191-1197 (Oct. 30) 1920.

deformity must be differentiated from blood clots, it being borne in mind that there may be both neoplasm and blood clots. It is of the greatest importance to differentiate between primary tumors of the ureter and metastasis from tumors in the renal pelvis. If the pelvis can be outlined, the true condition can usually be differentiated, since pelvic neoplasm almost invariably causes recognizable deformity. In recent years I have observed a number of localized granulomas of the ureter which may closely simulate neoplasm in every respect. A specimen removed through the cystoscope may be the only method of differentiation. The treatment of tumors of the ureter is necessarily surgical. We would hardly dare to employ radium or fulguration through the cystoscope.

DR. L. P. PLAYER, San Francisco: Last year I reviewed the literature and reported a case which I think brought out two or three points that I wish to stress. In the first place, the complaint was hematuria of three years' duration. The patient complained of jaundice occurring irregularly over a period of about two years. On cystoscopic examination we found two small tumors in the bladder, one situated at the ureteral orifice, the other in the dome of the bladder. The one in the dome of the bladder was fulgurated; that in the ureteral orifice we subjected to biopsy. A small specimen was sent to Dr. Rusk of the University of California, who diagnosed a papilloma. We could not pass a ureteral catheter more than 10 cm. on the affected side. Indigo carmine appeared normally from the good side, and there was no return from the opposite side. The question of diagnosis came up later when the patient returned with recurrent hematuria. I could not pass a catheter without causing a great deal of bleeding. The type of bleeding was not peristaltic, but just a steady stream of blood. Through the catheter I could not inject any opaque medium and could not make a pyelogram. Plain roentgen examination showed evidence of enlarged kidney on that side. We did nephrectomy and ureterectomy and on pathologic study of the specimens found a primary carcinoma of the ureter and hydronephrosis. Bleeding, nonperistaltic in character, and the fact that a papilloma in the bladder may be a metastasis of a carcinoma in the ureter are the points I wish to stress.

DR. A. W. HUNTER, Vancouver, B. C.: Three months ago I had a case of primary tumor of the ureter, with obstruction at the pelvic brim. This led me to believe that it was a new growth, or a non-shadow-throwing stone. Reexamination at the end of a week to exclude the presence of a blood clot revealed my ability to get by this obstruction and to get a pyelogram of the kidney, which showed no sacculation and did not reveal a tumor at the pelvis. The tumor was removed and found to be carcinomatous in character. In a preceding case, seen two or three years ago, the condition is of interest, as the diagnosis was made before operation on a tumor at the lower end of the ureter. The patient was a man who weighed about 250 pounds (123.4 Kg.), and I was a little slow in operating. He seemed to have had about enough operative intervention after I took out the tumor, so I decided to tie off the lower end of the upper portion of the ureter and trust that he would live. If he had too much trouble I intended to do a nephrectomy. After I had done this I looked up the literature and found I might be overlooking a primary tumor in the kidney with metastasis in the ureter. Fortune favored me in that Dr. Braasch happened to be in Seattle at the time, and I showed the pyelograms to him; he consoled me in the belief that if I left the kidney in, the man would live. It has now been about four years. I have called the patient up every three months and so far he remains in perfect health.

DR. P. E. MCCOWN, Indianapolis: As I suspected, this condition is not nearly as rare as it seems from the literature. As Dr. Braasch mentioned, when I presented a case of tumor of the kidney pelvis there was a rush of cases. I think there are about 200 on record now and in 1920 when I reported my case it was the forty-seventh or eighth. I thought because of the difficulties in diagnosis that it was worth while to call attention to this matter again. I wish to thank Dr. Johnson for discussing the etiology. I did not go into that because it would take too much time in a paper of this description. The experience of Dr. Thomas has been that of several of the men whose papers I reviewed. Furthermore, I feel that we should always remember, as Dr. Braasch said, that these ureteral papillomas may be secondary to a papilloma of the kidney pelvis, and this should be carefully determined before any decision to operate on the ureter alone is made. The difficulties of diagnosis are great. Our patient did not bleed. There was rather marked dilatation of the kidney pelvis and of the calices, and evidently it had been a slow closure of the ureter without any infection, which certainly would have called the patient's attention to the kidney condition. Dr. Player's discussion was of considerable interest. I hoped he would mention a condition that is quite unusual, and that is the resistance of the ureteral coat to secondary infection or invasion from the numerous malignant conditions of the pelvic organs, particularly in women. It seems to resist external invasions very well. In about 500 operations for malignant growths of the pelvic organs, one writer states that he saw ureteral invasion only four times. Primary tumors of the ureter are rather rare and may be confused with secondary ureteral tumors transplanted from papillomas of the kidney pelvis.

VIOSTEROL (IRRADIATED ERGOSTEROL) IN TREATMENT OF PARATHYROID TETANY *

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In some previous work I [1] found that cod liver oil raised the serum calcium and relieved tetany in parathyroidectomized dogs. In a further study cod liver oil and yeast was used to relieve tetany, and because of the favorable results the treatment was applied clinically to three patients and a report [2] was made.

Viosterol (irradiated ergosterol), having more potent vitamin D action than cod liver oil, was substituted in the treatment of experimental parathyroid tetany in dogs.[3] The results were such that it was then given to the patients previously reported on instead of the cod liver oil. Since that time two other patients have been added, so that this report includes five patients who are receiving viosterol. Tetany in four of the patients was the result of parathyroid deficiency following subtotal lobectomy. Two of these developed tetany soon after operation, while the other two developed symptoms during pregnancy. The fifth patient developed tetany after a long illness and gastro-intestinal upset. Complete case histories of the first three were given in a previous paper,[2] so only a summary report of these will be given here.

REPORT OF CASES

CASE 1.—Mrs. E., aged 36, white, had had a subtotal double lobectomy, March 17, 1926. She became restless and uncomfortable, and in the afternoon was seized with twitchings of the face and carpopedal spasm. Ten cubic centimeters of calcium chloride was given intravenously for relief. From that time on, she had symptoms of tetany and it was necessary to give calcium chloride in doses of from 30 to 60 grains (2 to 4 Gm.) daily and parathyroid extract-Collip weekly. Even with this treatment she was not free from symptoms.

I first saw the patient, Feb. 26, 1927. The serum calcium was found to be 7.86 mg. per hundred cubic centimeters of whole blood; she had a pronounced Chvostek reaction and a

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* The viosterol used in this work was kindly supplied by Mead Johnson and Company.

* From the Department of Surgery, University of Oregon Medical School, Portland, Ore.

1. Brougher, J. C.: The Treatment of Parathyroidectomized Dogs with Cod Liver Oil, Am. J. Physiol. **84**: 583 (April) 1928.

2. Brougher, J. C.: The Treatment of Parathyroid Tetany with Cod Liver Oil and Yeast, Northwest Med. **27**: 329-332 (July) 1928.

3. Brougher, J. C.: The Value of Acterol (Irradiated Ergosterol) in the Treatment of Thyroparathyroidectomized Dogs, Am. J. Physiol. **86**: 538-541 (Oct.) 1928.

positive Trousseau sign, and complained of insomnia, muscle spasm throughout her body, and tingling of the hands and feet.

Therapy with calcium and parathyroid extract-Collip was stopped and cod liver oil, 4 drachms (15 cc.) two times a day, and bakers' yeast tablets, 5 grains (0.32 Gm.) three times a day, were prescribed. She improved on this treatment and felt better than at any time since operation. In May, 1928, viosterol was substituted for the cod liver oil. The dosage used was 4 drops three times a day, and on this amount she seemed to improve and get along better than on cod liver oil. In December, 1928, she was again examined carefully and a mildly positive Chvostek sign was present. She had increased somewhat in weight but was not myxedematous. She was mentally active. The finger nails were not as brittle as they had been, and the numbness in her hands and feet was less during her menstrual periods on viosterol than on cod liver oil. She noticed that constipation or excitement caused an exacerbation of her condition. Whenever this patient was without viosterol for even a day, she noticed the symptoms of tetany recurring.

CASE 2.—Mrs. W., aged 45, a widow, white, was admitted with a diagnosis of toxic hyperplastic goiter.

May 11, 1926, partial lobectomy was done.

May 25, partial lobectomy was done.

May 28 the patient was very restless and had a positive Chvostek sign. She was given 20 grains (1.3 Gm.) of calcium lactate four times a day, and parathyroid extract-Collip occasionally until April 15, 1927, when cod liver oil and yeast treatment were instituted. At this time the patient had a fairly marked positive Chvostek sign and complained of insomnia and spasms in her hands and feet. The muscles of her forehead also twitched considerably at times, especially during her menstrual periods. She improved on cod liver oil, and the serum calcium was 10 mg.

In May, 1928, viosterol was given in a dosage of 4 drops daily. This completely prevented any disturbing symptoms of tingling in the toes or hands, restlessness, or spasm of any muscle. In March, 1929, the patient went without viosterol for a few days, but she began to feel quite nervous again, and cramping was noticed in the hands, feet and muscles of the throat and larynx. At the time of this report she is in good physical condition and is still taking viosterol.

CASE 3.—Mrs. X., aged 30, white, entered Multnomah County Hospital, Feb. 9, 1928, in a spastic state of tetany. She was seven and one-half months pregnant. Six weeks previous to this spastic tetany she had observed that her hands were numb and would cramp after she had been working. Three days before entering the hospital she had had headache, hyperesthesia about the cheeks, paresthesia about the lips, and twitchings in the muscles about the eyes and mouth. Hot flashes passed over her body, and she perspired profusely. Soon her arms and legs became numb and cramped painfully. These cramps were intermittent in nature until spastic tetany ensued. She was first given calcium chloride intravenously, and later parathyroid tablets, one-tenth grain (6 mg.) and calcium lactate, 15 grains (1 Gm.), three times a day.

February 12 the patient was given cod liver oil, 4 drachms (15 cc.), twice a day. No more tetany occurred and she was discharged, February 14. She was readmitted, March 16, and delivered of a full term male child. From March 16 to 19 she received no cod liver oil and again developed symptoms of tetany. At this time the blood coagulation time was ten minutes; two days after she again took cod liver oil the blood coagulation time was only six minutes. July 1, 1928, the patient was given viosterol, 6 drops, twice a day, and on this amount was free from tetany during lactation. Since the period of lactation, she has still found it necessary to take viosterol daily in the same dosage; however, she is able to go without it for a few days at a time.

CASE 4.—Mrs. A., aged 31, white, had a subtotal double lobectomy in March, 1918. A few hours after the operation she became very restless and noticed numbness in her face and extremities, associated with painful muscle cramps, which were quite generalized. For six days she could not sleep except under the influence of morphine. During this time she also had difficult and rapid breathing, and her temperature was high. Eating, swallowing and talking were much disturbed.

After the patient left the hospital the attacks of tetany came on in varying frequency of from two weeks to two months apart, and during her menstrual periods tetany was very severe. No diagnosis of her condition was made for five years; her only relief was a hypodermic. In 1923 the case was finally diagnosed as parathyroid tetany, and for two years she was given calcium and parathyroid tablets. They afforded her partial relief but she could not say that she was free from symptoms.

When I first saw her, she was seven months pregnant and, because of some nervousness, was taking parathyroid tablets, one-twentieth grain (3 mg.) and calcium, 5 grains. In spite of this medication she complained of numbness in her face, scalp, hands and feet, flexion of her forearms, and equinovarus spasms. These attacks were painful and tetanic in nature, not convulsive.

In June, 1928, she was given cod liver oil, 4 drachms, twice a day, in place of the calcium and parathyroid tablets. On this therapy she became free from symptoms within a few days and had no evidences of parathyroid deficiency during either gestation or lactation. After four months of cod liver oil therapy she was given, instead, 4 drops of viosterol twice daily and was free from all symptoms of tetany until March, 1929, when she had a severe attack of influenza, which brought on the symptoms again. The dosage of viosterol was increased to 20 drops twice a day, and the tetany was alleviated.

At the time of this report the patient is taking only 6 drops of viosterol and is clinically in good condition.

CASE 5.—Miss T., aged 28, white, developed symptoms of tetany following extensive resection of the intestinal tract. In June, 1923, she had a curettage. In July she was having fever and abdominal pain. Appendectomy was performed, the right tube and part of the ovary were removed, and a general peritonitis was drained. In December she had an obstruction, and 9 feet of intestine was resected. In the following June, four more feet was short circuited by anastomosis. Since these operations, she had had a constant and painful diarrhea of watery material and masses of mucus.

Since the resection of her intestine she had had repeated attacks of tetany with carpopedal spasm, painful spasms in other muscles, and rigidity. She had also complained of burning and tingling of the face and extremities. It is possible that the rapid emptying of the shortened intestinal tract had something to do with a calcium deficiency.

In November, 1928, she was found to have a positive Pool or Schlesinger's sign and a negative Chvostek sign. She was given 6 drops of viosterol twice daily in addition to the 15 grains of calcium she had been getting, and it seemed to relieve her greatly, as she was less nervous and irritable and slept better.

The patient has been taking the viosterol daily for a year now and feels that it benefits her a great deal in relieving the tingling and numbness in the extremities as well as the painful cramps which develop in the muscles if she goes without it. The serum calcium has increased from 6.7 mg. to 12 mg. on this therapy. The patient also states that she has severe spells of vomiting if she does not take the viosterol. It seems that the food does not enter her stomach, which may be due to cardiospasm.

COMMENT

Viosterol has been found to raise the serum calcium and alleviate tetany in adults having a parathyroid or calcium deficiency.

Gleich and Goodman [4] reported three cases in which the administration of viosterol markedly increased the blood serum calcium in a few days. Furthermore, it promptly stopped the convulsions in infants who were in a tetanoid state.

Stern [5] reported a case in a woman, aged 36, who had suffered from chronic parathyreoprival tetany for fifteen years following partial removal of the thyroid. Six weeks of vitamin D treatment in the form of

4. Gleich, M., and Goodman, S.: Irradiated Ergosterol in the Treatment of Tetany, New York State J. Med. **28**: 1398-1399 (Dec. 1) 1928.
5. Stern, A.: Zur Therapie der parathyreopriven Tetanie mit Vigantol, Deutsche med. Wchnschr. **54**: 1292 (Aug. 3) 1928.

viosterol sufficed to render the patient objectively and subjectively symptom free.

CONCLUSIONS

Four patients who developed a parathyroid deficiency after bilateral subtotal lobectomy were relieved of tetany by the administration of cod liver oil and subsequently viosterol. Two of these patients did not develop tetany until pregnancy. A fifth patient who developed tetany after an extensive intestinal resection was benefited by the use of viosterol.

Arts Building.

THE NEUROPSYCHIATRIC PROBLEM IN THE U. S. VETERANS' BUREAU*

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The Veterans' Bureau is the largest of the independent branches of the federal government, the director being responsible to the President (table 1). To it is delegated the responsibility for all activities having to do with medical care, and the treatment, compensation and insurance of veterans of the World War. Of the total cost of $439,000,000 for operating the Veterans'

TABLE 1.—*Expenditures During the Fiscal Year 1928*

Expenditure for medical care in dispensaries including salaries	$ 19,697,080.17
Expenditure for hospital services including salaries	26,107,024.59
Expenditure of central office	9,000,428.89
Compensation	181,799,665.82
Term insurance (disability and death insurance)	120,770,802.24
Adjusted compensation (bonus)	45,417,562.54
All other general expenditures	36,364,635.38
Total	439,157,199.63

Bureau in 1928, a little less than $46,000,000, or 10.5 per cent, was expended for the hospital and dispensary care of beneficiaries.

TABLE 2.—*Available Beds and Patient Load in Government, State and Civil Hospitals for the Treatment of Bureau Beneficiaries with Neuropsychiatric Disease*

	U. S. Veterans' Bureau Hospitals		Other Government Hospitals		Total Government Hospitals		State and Civil Hospitals	Grand Total	
Year	Beds Available	Patients	Beds Available	Patients	Beds Available	Patients	Patients	Beds Available	Patients
1920	1875	1363	7	7	1882	1370	3556	5438	4926
1921	2735	2568	1406	1295	4141	3863	3636	7777	7499
1922	3890	2911	1858	1803	5748	4714	4517	10265	9231
1923	4567	3647	2171	1979	6738	5626	3777	10515	9403
1924	5764	5119	2215	1956	7979	7075	2800	10779	9875
1925	8614	7433	2214	2054	10828	9487	2652	13480	12139
1926	9071	8496	2417	1989	11488	10485	2417	13905	12902
1927	9498	9081	1870	1417	11368	10498	2250	13618	12748
1928	10633	10044	1868	1393	12501	11437	1620	14121	13057

HOSPITAL FACILITIES

The bureau is operating forty-nine hospitals located in various parts of the country (table 2). Most of these are of modern construction and all have up-to-date equipment. Of the total number, seventeen are especially equipped to care for mental cases while facilities are provided for a limited number in some of the hospitals for medical and surgical patients. As indicated in table 2, the number of bureau beneficiaries with neuropsychiatric disease has increased from 4,926 in 1920 to 13,057 in 1928, and the number of beds in veterans' hospitals for this type of case during that time has increased from 1,875 to 10,633. A certain number of beds in hospitals operated by other branches of the government are available. These factors have made it possible not only to take care of the increased number of patients but to reduce the number hospitalized in state and civilian institutions under contract from 4,517 in 1922 to 1,620 in 1928.

At various sessions of congress the statutes granting hospitalization have been liberalized until at the present time practically any ex-service man is eligible for hospital treatment. Recent legislation has provided for a $15,000,000 hospital building program, and it is anticipated that within a few years it will be possible to care for all beneficiaries in government institutions.

HOSPITALIZATION OF BUREAU BENEFICIARIES WITH NEUROPSYCHIATRIC DISEASE

Table 3 indicates that the number of admissions, transfers and discharges of bureau patients hospitalized for neuropsychiatric disease has decreased since 1923. On the other hand, the number of deaths has increased slightly and the number of patients remaining under treatment has increased considerably as the result of an accumulation.

TABLE 3.—*Movement of Bureau Patients Under Hospitalization for Some Form of Neuropsychiatric Disease, Fiscal years 1923-1928*

Fiscal Year	Admissions	Transfers and Discharges	Deaths	Patients Remaining
1923	14,095	14,066	350	9,191
1924	12,119	11,170	268	9,461
1925	15,216	12,507	358	11,905
1926	12,489	11,505	448	12,220
1927	11,499	11,116	408	12,463
1928	11,454	10,704	414	12,839

ADMISSIONS OF PATIENTS WITH NEUROPSYCHIATRIC DISEASE DURING 1928

In reviewing table 4, it will be noted that the readmissions are greater than the admissions. There are a number of reasons for this situation: (1) the facility with which patients are discharged from bureau hospitals, no legal procedure being necessary; (2) the urgent demand for hospital beds, and (3) the tendency of the medical service to parole or discharge as many patients as possible so as to give them an opportunity to adapt themselves to community and home life.

The principal types of diseases for which bureau patients were admitted for hospitalization were paresis, schizophrenia, the psychoneuroses, manic-depressive insanity, and a group of nervous and mental diseases such as tabes dorsalis, epidemic encephalitis, neoplastic diseases of the brain and cord, and various types of paralysis.

DISCHARGES OF PATIENTS WITH NEUROPSYCHIATRIC DISEASE DURING 1928

A review of table 5 indicates that there were 11,118 bureau patients discharged during 1928 following hospital treatment for some neuropsychiatric disease. Of this number 2,659 were hospitalized for a psychoneurosis; 2,020 had been hospitalized for schizophrenia; 512 for paresis; 329 for manic-depressive insanity, and 632 for various forms of neuritis.

* Read before the Section on Nervous and Mental Diseases at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

† Dr. Crossman died, June 21, 1929.

WAR EXPERIENCES AS ETIOLOGIC FACTORS OF NEUROPSYCHIATRIC DISEASE

The importance of war experiences as etiologic factors in the development of the neuroses and psychoses has been discussed from time to time. However, a brief review of some of the salient points may be of value.

The psychoses as well as the neuroses observed in the U. S. Veterans' Bureau may be classified as follows: (1) those cases which had their inception during the war period or were precipitated by war service; (2) postwar psychoses and neuroses considered by law as of service origin and known as "presumptive cases." The first group includes the conditions which developed during the war period and in which there was a probability that war experiences were the predominant factors in their etiology, recurrence or exacerbation. The second group, namely, the presumptive cases, comprises those in which there is an element of doubt as to the rôle of the war experience in the etiology of the disease, so that congress passed legislation giving the ex-service man the benefit of the doubt.

TABLE 4.—*Admissions of Neuropsychiatric Patients to All Hospitals by Classification of Disease and Type of Admission During Fiscal Year 1928*

Classification of Neuropsychiatric Disease	First Admission	Readmission	Admission by Transfer	Total
Psychosis:				
Traumatic	8	13	7	28
Senile	13	9	4	26
With cerebral arteriosclerosis	8	7	5	20
Paresis	230	161	102	493
With cerebral syphilis	29	16	8	53
With Huntington's chorea	1		2	3
With brain tumor	2			2
With other brain or nervous diseases	4	6	2	12
Alcoholic	50	41	10	101
Due to drugs and other exogenous toxins	4	2	2	8
With pellagra	4	4		8
With other somatic diseases	23	45	19	87
Manic-depressive	103	165	63	331
Involutional melancholia	2	1		3
Schizophrenia	511	929	765	2,205
Paranoia or paranoid conditions	5	10	1	16
Epileptic	15	80	31	126
With psychopathic personality	11	49	22	82
With mental deficiency	17	49	20	86
Undiagnosed	116	85	17	218
Without psychosis:				
Constitutional psychopaths	93	307	27	427
Drug addiction	18	35	5	58
Epilepsy	159	290	15	464
Mental deficiency	58	94	8	160
Psychoneuroses and neuroses:				
Hysteria	311	584	23	918
Neurasthenia	263	425	7	695
Neurosis, anxiety	58	101	6	165
Neurosis (otherwise unclassified)	27	39		66
Psychasthenia	225	399	17	641
Psychosis, hysterical	6	14		20
Trance		3		3
Neurosis, traumatic	26	44		70
Other neuropsychiatric diseases	1,534	1,530	44	3,108
Under observation neuropsychiatric diseases	352	375	24	751
Total	4,286	5,912	1,256	11,454

C. S. Read [1] maintains that the development of a neurosis depends on three factors: heredity, early individual experiences, and some precipitating cause. During the world conflict, with its horrors of modern warfare, the precipitating factor, that is, the military experience, was so predominant that the influence of heredity as well as the past individual experiences were overshadowed.

It might be well to state that in the experience of the bureau very few of the neuroses were caused by explosions or warfare gases. The term "shell shock" used during and immediately after the war for these neuroses was really a misnomer in that a large number of these conditions were the result of emotional factors. However, in either case the real etiologic factor was inherent in the individual.

In considering the causative factors of the psychoses of warfare, one is impressed with the complete transformation which the soldier underwent during military service. During this period there was a subjugation or self-effacement of the individual; abnegation of free thought and conduct, and the difficulty of adjusting oneself to the rigid military discipline. These forces, together with a psychopathologic predisposition, tended to produce mental reactions of an abnormal kind. These reactions were increased in extent and number by associated factors, such as the breaking of social ties, family care, financial reverses at home, and the dread of future incapacity or loss of life.

From 1917 to 1919 inclusive, 313,200 men were discharged from the army, navy and marine corps for various disabilities, of which number 78,930, or 25.2 per cent, had some form of neuropsychiatric disease.

TABLE 5.—*Discharges from U. S. Veterans' Hospitals of Neuropsychiatric Patients by Type of Disease During Fiscal Year 1928*

Classification of Neuropsychiatric Disease	
Psychosis:	
Traumatic	26
Senile	23
With cerebral arteriosclerosis	25
Paresis	512
With cerebral syphilis	64
With Huntington's chorea	3
With brain tumor	5
With other brain or nervous diseases	17
Alcoholic	102
Due to drugs and other exogenous toxins	8
With pellagra	10
With other somatic diseases	91
Manic-depressive	329
Involutional melancholia	5
Schizophrenia	2,020
Paranoia or paranoid conditions	20
Epileptic	113
With psychopathic personality	83
With mental deficiency	93
Undiagnosed	102
Without psychosis	1,187
Psychoneuroses	2,659
Tabes dorsalis	151
Hemiplegia	182
Multiple sclerosis	116
Neuritis	632
Paralysis agitans	88
Paralysis	149
All other neuropsychiatric conditions	2,266
Total	11,118

It has been noted that while in a large number of instances the neuroses ceased when active warfare was at an end, the psychoses continued to develop.

TYPES OF TREATMENT

During recent years more emphasis has been placed on the treatment of psychotic patients, and it is the aim of the bureau to provide medical attention for its beneficiaries which will be second to none.

Occupational Therapy.—This is used as an adjunct therapeutic measure in the bureau with most excellent results. Occupational therapy [2] is graded into (1) habit training; (2) crafts and shop work, and (3) industrial activities, such as agriculture in its various forms and work about the station. This type of treatment is prescribed by a medical officer after a study of the patient's industrial background, his present mental and

1. Read, C. S.: Military Psychiatry in Peace and War, London, 1920.

2. Kefauver, H. J.: The Vocational Aspect of Occupational Therapy, Occup. Therap. 5:1 (Feb.) 1926.

physical condition, and his likes, dislikes and adaptability, with a view of giving that type of occupational therapy which will result in maximum benefit. In veterans' hospitals it has been observed that various occupational therapy measures have eliminated many psychotic upsets and have had a tendency to keep within normal bounds introverts and mischief-making extroverts. The patient who begins in the habit-training class is advanced as soon as is practicable to the simple form of shop work, and then to a type of activity requiring more coordination and concentration; as soon as possible he is sent to the dairy, poultry yard or some outdoor activity where he will be doing a real man's job.

In the treatment of psychotic patients, two objectives are sought: hospital adjustment and social adjustment.[3] The attainment of the first objective is hastened by suitable occupational therapy and recreational activities. It is the aim to make the patients interested, satisfied and efficient members of the hospital community in which they live. In order to accomplish this, proper work, sufficient exercise and recreation are provided. When the patient has made a hospital adjustment, he is on the way to social adjustment. Those who have progressed so that parole is being considered are given occupations which so far as practicable simulate life in the community. A study of the reaction of the patient to various forms of occupational therapy assists in determining the advisability of parole.

Physical Therapy.—The use of physical methods in the treatment of disabled service men in the army and navy hospitals was so successful that special attention has been given to this branch of therapy in the bureau. In neuropsychiatric hospitals, hydrotherapy and physical exercise are especially emphasized, while electrotherapy, actinotherapy and massage are used to a lesser extent. At each hospital there are trained technicians who, on the prescription of a medical officer, administer these forms of treatment. The hydrotherapy installations consist of continuous baths, which are of value in the quieting of disturbed patients, and control tables with needle shower baths, with which either tonic or sedative treatments may be given.

In the large hospitals, physical directors are on duty. These employees supervise graduated exercises in classes and, when indicated, in individual patients. Various recreations are used for therapeutic purposes, it having been found that many patients can be induced to enter into competitive games such as baseball, handball, volleyball, tennis and track athletics when interest cannot be otherwise aroused.

Social Work.—The services of psychiatric social workers are being increasingly utilized by the bureau in relation to diagnosis, treatment and follow-up (table 6). It is the usual procedure to have a complete social study made of each patient admitted to the hospitals specializing in the treatment of neuropsychiatric patients, in order to have an understanding of his social setting, the emotional relationships present, the events that have influenced the development of his personality from infancy, and the factual or delusional basis for his present ideas and interpretation of the events that have led up to his hospitalization. With social data of this kind the regional office dispensaries are finding it unnecessary to hospitalize claimants for observation in some cases; in others the observation period in a hospital is markedly shortened. During the year 1928, 6,475 complete social studies were made.

Preparole investigation of the home situation to learn and, if necessary, to modify family attitudes, standards of living, financial resources and possibilities for recreation and employment are being made in an increasing number of instances when a patient's return to the community is under consideration. This not only expedites his safe return, thereby encouraging the family to agree to and cooperate in his having a trial visit, but makes possible a more satisfactory life outside the institution with less liability of requiring early readmission. The supervision of patients in the community is the phase which presents the greatest challenge to the group of Veterans' Bureau psychiatric social workers, and they are particularly interested in helping the patients reach an occupational adjustment.

Many of the claimants reside long distances from the hospitals or dispensaries, which makes it necessary that the social worker utilize to the maximum existing social agencies in the community.

The carrying of concepts of mental hygiene and health standards into rural communities constitutes a unique social work contribution by the Veterans' Bureau.

Aside from its more intensive work with paroled patients, the Veterans' Bureau at least once a year has a social survey made of each incompetent beneficiary living in the community and of the 33,787 minor wards of the Veterans' Bureau; that is, children of incompetent or deceased beneficiaries who are receiving compensation on account of the parent's service-connected disease. These are preventive aspects of social work, as they afford opportunity to discover and modify adverse elements tending to precipitate an acute attack, to arrange for early reexamination and treatment in the case of incompetent beneficiaries, and to take prompt action regarding behavior or health problems which may be developing in the children. Table 6 shows certain of the activities of the eighty-three Veterans' Bureau psychiatric social workers during 1928.

TABLE 6.—*Activities of the Eighty-Three Psychiatric Social Workers from January to December, 1928*

Home visits	13,085
Investigations:	
Complete social studies	6,475
Studies of special points	9,063
Preparole	890
Social problems handled (monthly average):	
Personality adjustment	468
Financial	818
Home conditions	421
Employment	221

IMMEDIATE RESULTS OF HOSPITALIZATION

In table 7 are indicated the immediate results of the hospitalization of bureau patients with neuropsychiatric disease. It is noted that, of 11,118 patients discharged during the fiscal year 1928, 1 per cent were reported as recovered, 44.26 per cent as improved and 6.83 per cent as unimproved; 3.72 per cent died during hospitalization, and 44.19 per cent were discharged for various administrative reasons.

The reason for the small percentage of recoveries is that bureau physicians are inclined to be conservative in recording the immediate results of treatment and consider patients in the stage of remission as "improved" rather than as "recovered."

3. Carr, B. W.: Occupational Therapy for Psychotics; U. S. Vet. Bur. M. Bull. 2: 362 (April) 1926.

LATE RESULTS OF HOSPITALIZATION

For the purpose of ascertaining the late results of treatment, a special study was made of a group of patients hospitalized for neuropsychiatric disease. The ultimate benefit from hospitalization is difficult to ascertain unless some follow-up system is in operation at a hospital (table 8). The statistical system in the bureau is such as to lend itself readily to follow-up studies for the purpose of ascertaining the end-results of treatment. The bureau hospitals, working as a control group, are in a position to make a more complete follow-up study than any other psychiatric institutions because they are not restricted by state lines, because the bureau is also in contact with the patients or their legal representatives on account of compensation benefits, and because of the social service available in the hospitals and dispensaries.

In this investigation a study was made of the hospital records of 2,684 bureau patients whose treatment began prior to June 30, 1922, and who were discharged after being hospitalized for various periods. The time covered by this study was from June 30, 1922, to Nov. 21, 1928. It was thought that the results of hospitalization over a period of approximately six years should give a reliable index to the results of the institutional care of patients with neuropsychiatric disease. In selecting this group of patients, one of the requirements was that the specific diagnosis of the patient continue throughout the period of hospital treatment. The majority of the patients under treatment in veterans' hospitals are between 30 and 40 years of age.

TABLE 7.—*Immediate Results of Hospitalization for Neuropsychiatric Disease for the Fiscal Year 1928*

	Number	Per Cent
Recovered	111	1.00
Improved	4,921	44.26
Unimproved	759	6.83
Died	414	3.72
All other discharges	4,913	44.19
Total	11,118	100.00

TABLE 8.—*Late Results of Treatment of 2,648 Patients First Hospitalized Prior to 1922 for Some Form of Neuropsychiatric Disease*

	Number	Per Cent
Recovered	16	0.60
Improved	1,358	50.60
Unimproved	868	32.34
Died	280	10.43
Not reported	162	6.03
Total	2,684	100.00

TYPE OF CONDITION TREATED

At this point it might be well to elaborate briefly on the nature of some of the more common neuropsychiatric diseases encountered in the group of patients under consideration and to attempt to describe the part played by the military service in their cause, clinical course and progress.

Paresis.—Chavigny is of the opinion that the paretic patient of the war shows a tendency to maniacal and excited states. Read was unable to confirm this finding. A number of observers have come to the conclusion that the difference in susceptibility in paresis must be due to the individual rather than to a difference in the etiologic organism.

The question is often asked whether or not warfare with its stress and strain brings about an increased incidence of this disease; also whether the symptoms evolve more quickly in such circumstances.

White is of the opinion that the development of this disease is hastened by active warfare. On the other hand, Hotchkiss in his analysis of cases at the Dykebar War Hospital arrived at the opinion that military service did not increase the incidence of this disease.

It is a fact, however, that the age incidence of paresis in veterans is somewhat earlier than in the civilian population, which indicates the possibility that the period of incubation is shorter among the military population. Furthermore, the data of the bureau hospitals seem to show that, once the disease develops, it progresses more rapidly than do the cases in civil life.

There were 246 patients with paresis in the group of 2,684 patients admitted for hospitalization previous to 1922. Of this number at the end of the observation period none had recovered; thirty-seven, or 15.04 per cent, were improved; thirty-three, or 13.41 per cent, were unimproved, and 176, or 71.55 per cent, had died.

In this connection it might be well to say a word or two about the treatment of paresis by "inoculation malaria." The clinical and laboratory observations following this treatment were most favorable. The good results were suggested by Matz [4] as being due to the age of the bureau patients (average age 38 years), and the early diagnosis and persistent intensive antisyphilitic treatment, as well as to the excellent care which these patients received in the bureau hospitals. The longest period of treatment and observation was forty-seven months and the average was twenty-seven months.

Of a group of 346 patients treated by "inoculation malaria," 23.99 per cent were greatly improved; 41.04 per cent were improved, and 22.83 per cent were unimproved; 7.31 per cent showed deterioration, and 3.47 per cent had died. In 1.16 per cent, the condition of the patient was not recorded.

At a number of bureau hospitals where tryparsamide has been used in the treatment of neurosyphilis, the results obtained have been very encouraging. For instance, Neymann and Singleton [5] in a group of cases have found that 50 per cent of the group showed improvement or had recovered. They also found that parenchymatous syphilis of the central nervous system responds more favorably to tryparsamide therapy than does the mesoblastic type.

Schizophrenia.—This disease was one of the most common of the psychoses observed in the army. While there are several theories concerning the etiology of schizophrenia, it is our opinion that this condition, with a susceptible patient, may be precipitated by active military service and is the result of maladaptation of the soldier to his military environment.

The group studied consisted of 803 patients admitted for treatment previous to 1922 for the various types of dementia praecox. Of this number at the end of the observation period, none were reported as recovered; 305, or 37.98 per cent, were improved; 300, or 37.36 per cent, were unimproved, and eighty-three, or 10.34 per cent had died. In 115, or 14.32 per cent of the cases, the result of treatment was not recorded.

4. Matz, P. B.: The Treatment of Neurosyphilis by "Inoculation Malaria" in the United States Veterans' Bureau, J. Nerv. & Ment. Dis. **68**: 113 (Aug.) 1928.

5. Neymann, C. A., and Singleton, D. E.: Therapeutic Results with Tryparsamide in the Treatment of Neurosyphilis, U. S. Vet. Bur. M. Bull. **2**: 435 (May) 1926.

Constitutional Psychopathic Inferiority.—The patients in this group had some abnormality of the emotional rather than of the intellectual sphere. Those under observation in the bureau hospitals showed qualities of marked suggestibility and emotional instability, so that inhibitions to the control of various instinctive impulses were much lessened and abnormal conduct in some form or other manifested itself early in life.

One hundred and thirty-nine patients of this group were studied. At the end of the observation period none were discharged as recovered; fifty-two, or 37.41 per cent, were improved; seventy-six, or 54.68 per cent, were unimproved, and one, or 0.72 per cent, had died. In ten, or 7.19 per cent, the condition on discharge was not ascertained.

Epilepsy.—Little can be said regarding the part played by the military service in the causation of epilepsy. In those instances in which the condition was cured, it was felt that the nature of the disease was functional. A number of these cases were due to war injuries and were of the traumatic type.

There were 225 patients in the group. On termination of treatment, none had recovered; ninety-seven, or 43.11 per cent, were improved; 116, or 51.55 per cent, were unimproved, and six, or 2.67 per cent, had died. In six, or 2.67 per cent, the condition on discharge was not obtained.

Mental Deficiency.—The condition of mental deficiency was one of the most important with which the recruiting officer, as well as the medical officers in the various camps, had to deal. A large number of mental defectives who were taken into the army were not permitted to use a rifle and it was necessary to allow them to perform only simple duties. It was found that these individuals broke down quite frequently when the slightest responsibility was placed on them. Eleven thousand and three men were discharged from the army, navy and marine corps during 1917, 1918 and 1919 on account of mental deficiency.

Colonel Salmon was of the opinion, after the experiences of the World War, that mental defectives should be debarred from the military service. Other observers also state that their presence in the military establishment is a menace.

It is interesting to note that one of the principal symptoms manifested by these feebleminded soldiers was the wandering spell, which lasted for hours in some instances, the soldier being found away from his unit in a more or less dazed condition. Many of these defectives were court-martialed for desertion and often punished when, as a matter of fact, they were totally irresponsible for the acts committed.

There were 228 patients with mental deficiency in this group. On termination of hospital treatment none had recovered; seventy-nine, or 34.65 per cent, were improved, and 145, or 63.6 per cent, were unimproved. In four, or 1.75 per cent, of the cases, the ultimate condition was not reported.

ORGANIZATION OF BUREAU WORK

In connection with this discussion of the treatment of neuropsychiatric patients, it may be of interest to speak of certain developments which materially assist in the medical work of the bureau.

Medical Council.—In order to administer forty-nine hospitals and fifty-four dispensaries properly and efficiently, the medical service decided that it might be well to seek the cooperation and counsel of some of the outstanding men of the profession to guide it in matters of medical policy. Accordingly a number of the leading physicians, hospital administrators and statisticians were requested to meet with the medical director and to organize the medical council.

The members of the council meet periodically at Washington, D. C., for the purpose of advising the medical service on various problems of professional and scientific importance confronting it. The members of the medical council are frequently requested to inspect hospitals and dispensaries for the purpose of ascertaining whether or not the work of these activities is done in accordance with accepted medical standards.

Diagnostic Centers.—In the course of the hospitalization and dispensary care of bureau beneficiaries, conditions were encountered which were difficult of diagnosis or of successful treatment. Accordingly it was decided to establish a number of centers to which these problem cases would be sent for diagnosis or treatment. The consulting staffs of these diagnostic centers consist of some of the foremost physicians and surgeons of the country.

At the present time three institutions of this type are in operation at Washington, D. C., Cincinnati and Palo Alto, Calif. A fourth diagnostic center is in contemplation and will be located at the Edward Hines, Jr. Hospital, Hines, Ill., near Chicago.

Research.—In 1925 the medical service established a research department, the object of which was to administer, foster and encourage research in the hospitals and dispensaries of the bureau. Through the research department the medical service makes studies of available medical data in the bureau and measures therapeutic results and accomplishments in the hospitals and dispensaries in the treatment of various diseases. Through this department also the medical service investigates the standards and definitions for clinical improvement in medical centers and applies these to bureau work.

The staffs of the hospitals and dispensaries are encouraged to engage in research work so far as their duties will permit. The research department of the medical service receives the cooperation and assistance of the research group of the medical council.

Postgraduate Schools.—In 1928 the medical service of the bureau established two postgraduate schools—one at the U. S. Veterans' Hospital in Palo Alto, Calif., and the other at the U. S. Veterans' Hospital in Washington, D. C. Instruction at these postgraduate schools is continuous throughout the year and is given by the members of the consulting and resident staffs of the two hospitals.

U. S. Veterans' Bureau Medical Bulletin.—On account of the large amount of clinical material found in the bureau hospitals and dispensaries and also for purposes of education, the medical service established a monthly journal, the *Medical Bulletin*. Each full-time medical officer is required to contribute at least one article a year to the *Bulletin*. This journal also serves as a medium for reporting the results of research work conducted in the various hospitals and dispensaries of the service.

SUMMARY AND CONCLUSIONS

1. The experiences of modern warfare undoubtedly have precipitated many psychoneurotic and, to a lesser degree, psychotic attacks, and also have hastened the development of paresis, in many instances causing a more rapid course of the disease.

2. Among psychotic cases intensive professional treatment, with personal attention to each patient, not only is most effective in bringing about improvement of the condition but results in a diminution of the period of hospital stay.

3. With proper soil, schizophrenia apparently develops to a considerable extent as the result of the stress, worry and rigid discipline of modern warfare.

4. Bureau psychoneurotic patients are more effectively treated in most instances in dispensaries than in hospitals.

5. The bureau physicians are inclined to be conservative in reporting the result of hospitalization. It is their tendency to report cases in remission as "improved" rather than as "recovered."

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ABSTRACT OF DISCUSSION

DR. THEODORE DILLER, Pittsburgh: I have been touring Europe for the last three summers. Three hospitals that I visited impressed me very much; one in Hungary, one in Copenhagen and the other in Barcelona. All of these hospitals had one thing in common: exceedingly attractive grounds or gardens and surroundings. I have seen several hospitals in France, delightfully situated, one in particular at autumn was exceedingly charming, resembling a fine old-fashioned home, and it has been in operation 400 years. I have been impressed with the ugliness of many of our hospitals in cities. The beautification of the grounds and surroundings has been wholly neglected too often. We live in a beautiful country; we meet in a city where trees and flowers are abundant and where they are greatly appreciated by those who are at home and those of us who come here from a distance. I make a plea for taking advantage of these beautiful things for our hospitals. They have their effect on the patients, on nurses and on the friends of patients. I hope that the authors can tell us that the veterans' hospitals are well situated and are in beautiful surroundings.

EVALUATION OF THE MOTILITY OF THE SPERMATOZOA

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For years the motility of the male sex cells has been considered the chief or even sole criterion by which to judge the fertility of the male. It is too often forgotten, however, that motility is not even an inherent attribute of the spermatozoa, and Schücking [1] believes that in some animals with external fertilization the sperms, themselves not motile, may be brought to the ovum by external circumstances and then fertilize it. This is contradicted by others,[2] but the fact that such a difference of opinion can occur shows that motility alone must not be rated too highly. There are other characteristics of the sperm cells which are just as important as motility, as I [3] have brought out before in previous articles.

In animals with internal fertilization the spermatozoa, of course, need motility to reach the ovum, but the degree of motility present under the microscope in any one particular instance must not be interpreted as giving a direct clue as to the fertilizing power of the sperms. Loss of motility, or lessened motility of the sperms, is of course of great importance, but only if carefully repeated examinations can show that such disturbed motility is really present. A sluggishly motile or even nonmotile spermatozoon is not necessarily a dead or useless cell. In the testis the sperms are normally nonmotile, and even in the ejaculated semen a nonmotile cell may be merely dormant. On the other hand, the fact that the cell is motile does not in itself mean that its fertilizing power is undisturbed. As in the ovum the fertilizability, so in the spermatozoon the fertilizing power, gradually decreases until the sperm cell is practically powerless to produce fertilization even if it is still motile. This has been shown by numerous experiments (Wolf,[4] Ivanoff,[5] Walton, Hammond and Asdell,[6] Hammond and Asdell,[7] Walton [8]). Furthermore, I have seen highly abnormal cells actively motile.

In examining the fresh sperm cells in my cases, I used first a number 6 Leitz objective and a 10 Leitz ocular, and then a Leitz 1/12 oil immersion objective and the same ocular as before. I also used the dark field in some instances. Never at any time was I able to see any expansion or contraction of the sperm head, as is mentioned sometimes in the literature. It is to be admitted that at times expansion and contraction of the sperm head seemed to exist, but close examination always showed that the apparent change in size and shape of the sperm head was due to its turning on its longitudinal or even vertical axis, thus seeming to produce expansion and contraction of the head. In addition, the refraction of light caused by the disturbance of the seminal fluid around the sperm head always magnified the apparent size changes of the head. While it is true that the sperm head of the starfish after it enters the ovum without its body or tail oscillates from side to side as Chambers [9] has described, there is here also no expansion or contraction of the sperm cell, and the slight motion observed may be explained by chemical or mechanical factors (currents of cytoplasm in the ovum, for example). The observation of Lillie [2] that a contraction of the nereis sperm head takes place after it enters the ovum also has nothing to do with an ameboid-like activity of the sperm head, as the whole process here is more one of simple shrinkage than of any active change in shape. As far as the large "sniffing" or "seeking" sperm cell is concerned, it always appeared to me that this was a cell which had lost most of its original tremendous activity, and thus, because it was slowed down, seemed to hesitate and search for some object to attack. Such "sniffing" cells are generally not larger than others. In fact, no normal semen specimen ever shows many differences in the size of the cells, as will be brought out fully in another paper dealing with the morphology and biometrics of the spermatozoa.

In order to determine as closely as possible the value of motility as a criterion of the normality of the semen otherwise, I made extended tables of motility and the duration of motility. A study of these tables, which are not presented here, as their main points can be given in a few words, showed what deceptive criterion motility alone may be. Some specimens of semen from men with perfectly normal breeding records contained actively motile sperms which remained alive twelve, twenty-four and even thirty hours and more, whereas other samples from equally normal men contained only sluggishly motile cells which were nearly all dead apparently after from five to six hours. Again, specimens of

1. Schücking: Arch. f. d. ges. Physiol. **97**, 1903.
2. Lillie, Frank: Problems of Fertilization, Chicago, University of Chicago Press, 1919.
3. Moench, G. L.: Am. J. Obst. & Gynec. **13**: 334 (March) 1927; M. J. & Rec. **126**: 94 (July 20) 1927; M. Herald, March, 1928.
4. Wolf: J. Agr. Sc. **11**, 1921.
5. Ivanoff: J. Agr. Sc. **12**, 1922.
6. Walton, Hammond and Asdell: Verhandl. f. Sexualforsch. **2**, 1928.
7. Hammond and Asdell: Brit. J. Exper. Biol. **4**, December, 1926.
8. Walton, J.: Proc. Roy. Soc., S. B. **101**: 303 (April) 1927.
9. Chambers, R.: Proc. Soc. Exper. Biol. & Med. **20**: 137, 1922; J. General Physiol. **5**: 821 (July) 1923.

semen with many palpably abnormal forms, which were always looked for in the fresh specimens, would have very actively motile cells which remained so for a long time. In many instances specimens from the same man obtained and kept under apparently identical conditions would show different degrees of motility. It might naturally be argued that conditions were different, even if they appeared identical; but if such slight variations as escape detection under ordinary circumstances can affect the sperms, too much value cannot be placed on slight changes in motility observed under the microscope. W. W. Williams [10] also believes that motility alone may be a deceptive criterion, since apparently trivial factors influence it. Lewis,[11] in working with boar sperms, regularly found that the sperms of some animals lived longer outside the body than those of others, although he was unable to assign any reason for this difference of behavior.

It is of course quite generally true that spermatozoa do not all live equally long outside the body, and curves of the percentage of motile forms at different time intervals give considerable variations in motility. The cause of this is unknown. It is certainly not due to the abnormal forms, as I have seen these live as long as other normal cells in the same specimen, and at times even longer. It seems to me that the whole occurrence is simply one of random sampling. As long as all the sperms in laboratory specimens have to die eventually, some will have to die first, as the conditions cannot be exactly equal for each single cell. I can for this reason also attribute slight significance to the finding of many dead sperm cells in the cervical or uterine secretions, since the death of millions of sperms in these locations must be the normal occurrence.

As far as the actual motion of the spermatozoa goes, I always found this to be flagellate and progressive in addition to rotary about the long axis of the sperm cell. That is, the actual mode of progression was in larger or smaller spirals. It was interesting to note in my specimens the thigmotactic and flocculation reactions [12] of the human sperms. The germ cells would gather around the edge of a drop or radially around the foreign body as though attempting to fertilize it, and remain almost immobile, or rotate only on their long axis, both clockwise and counter clockwise until disturbed, when they would dash off violently in all directions.

In order to test out the various ways in which motility could be affected, I tried out various diluents, as distilled water, salt solutions of varying strengths, including physiologic solution of sodium chloride, and also various dilutions of sodium bicarbonate, dextrose, human blood serum, and numerous chemicals. In every case, with the exception of human blood serum and 2 to 5 per cent dextrose solution, motility was reduced by the diluent. In the last two solutions the sperms remained actively motile even longer than in the natural semen. This seems easy to understand as far as the dextrose solution is concerned, but the explanation in the case of the serum is not quite clear to me as yet and is still under investigation.

By diluting the semen with equal parts of 5 per cent dextrose solution I have been able to observe motility of the sperms for more than fifty-four hours after emission. Such continued motility would seem to contradict Cohn's [13] view that the sperms have only a certain definite amount of energy to expend. One must remember, however, that one never sees all the cells of any specimen actively motile, so that some of those lying motionless may simply be resting.

In adition to the points mentioned, I further investigated whether light or gravitation had any effect on human sperm cells and their motility. However, the cells never showed any difference, whether kept in the dark or in the light, and allowing them to settle also had no effect on their motility, except a purely mechanical inhibitive action. When the cells were released from this inhibition, they again became actively motile.

That change in temperature affects the sperms is of course well known, but I believe that it is generally less well known that the sperm cells are much less sensitive to low than to high temperatures. Specimens which were kept cold, for instance, retained their motility longer than those kept at room temperature, probably because the sperms are more sluggish in the cold and thus use up their store of energy more slowly.

I also tried out the effect of temperature on motility by keeping samples of the same semen specimen (1) undiluted, (2) diluted half and half with 5 per cent dextrose solution, and (3) diluted half and half with physiologic solution of sodium chloride in one case in the icebox; in the second case in the incubator at from 37 to 38 C., and in the third case at room temperature. After eighteen hours the specimen from the icebox showed a few slightly motile sperms in the undiluted semen, and the cells could not be vivified by warming or by adding dextrose. The specimen in physiologic solution of sodium chloride showed no motile forms, and no cells could be made motile. The dextrose specimen, on being taken from the icebox, however, showed about 10 per cent motile forms, and, on being warmed, about 50 per cent of the cells became actively motile. At room temperature, the sperms in the undiluted semen after eighteen hours were nearly all immotile, only a few showing slight motion. The saline solution showed most of the cells actively motile, and the dextrose solution showed practically all the cells normally motile. The specimen kept in the incubator for eighteen hours showed no motile sperms at all, either in the undiluted or in the diluted semen, and the cells could not be revived. Thus my experiments seem to corroborate the general view that the spermatozoon can live only a relatively short time at the temperature it is subjected to in the female genital system. At the same time, the results cannot be transferred directly, since the question of the hydrogen ion concentration plays a rôle here, too, and the hydrogen ion concentration is not likely to be the same in such different solutions as in the uterus or tubes.

Since cold affects the spermatozoa less than heat, I keep my specimens in the icebox at a temperature of 10 C. but my examinations are always carried on at room temperature. A warmed microscope stage was not used. The latter, in my opinion, is not only cumbersome but useless, since, if all examinations are made at room temperature, conditions remain more or less the same in this respect at least, and comparative results are possible. Furthermore, spermatozoa which die quickly only because they are exposed to room temperature, unless the latter is excessively high, are probably not virile enough anyway to overcome the obstacles necessary to reach the ovum.

Some observers state that the vitality of the sperms from old bucks (rabbits) is lessened and that such cells

10. Williams, W. W.: Cornell Vet. **17**, October, 1927.
11. Lewis: Oklahoma Exper. Sta. Bull. **96**, 1911.
12. Dewitz: Arch. f. d. ges. Physiol. **37**: 219, 1885; 358, 1885-1886. Massart: Bull. de l'Acad. Roy. de Belgique **15**: 750. Walton: Brit. J. Exper. Biol. **2**, October, 1924.

13. Cohn: Anat. Rec. **21**: 530, 1921; Biol. Bull. **34**: 167, 1918.

are more sensitive than those from younger animals.[14] In my experiments I have not been able to determine any such relationship to age. I have, however, found that poor general health affects motility, one man losing all motility after an attack of influenza and, to date, six months later, not having yet regained it. It has been said that frequent intercourse reduces motility. This I cannot corroborate. Some specimens after repeated intercourse appeared to present a lessened motility, but since other most trivial factors, as described, may influence motility, I did not attach much importance to these observations. I can, however, definitely state that in many cases frequent intercourse over a continued period of time did not in any way impair motility, but individual variations again appear to play a rôle here. It is known that some couples may for years have daily intercourse and still have numerous children, whereas other marriages seem to become sterile following sexual overloading.

Whether or not it is true that straight tailed sperms mean that the spermatozoa are alive at the time of emission, on the theory that live cells thrown out in disarray straighten out and dead ones do not, is a question which I cannot answer. But one can easily conceive of the tails straightening out, even in dead cells. It is known, for instance, that cells with coiled and twisted tails do not by themselves mean dead cells, as I have seen such sperms motile, even though, as a result of the loss of the active lashing of the tail, they moved but slightly and slowly. Furthermore, coiled tails may be produced after ejaculation as a result of chemical changes. I have been able to produce such twisted tails, for instance, in the majority of the cells of a specimen of semen by diluting it three to four times with distilled water and letting the specimen stand for a short time. This is described in detail elsewhere.[15]

SUMMARY

It can be said that motility of the sperm cells is a requirement without which, in animals with internal fertilization, pregnancy cannot occur. Motility is, however, not an exclusive requirement of the sperms, since other factors are just as important. Absence of all motility in repeated, absolutely fresh and uncontaminated semen specimens establishes the cause of the sterility, but the slight changes in motility, as to the degree and length of time the cells remain active, unless such time is unduly short, must be judged very cautiously, as often such changes mean nothing, being due to purely temporary and accidental local conditions.

In addition to the examinations of the ordinary fresh specimens, I also tried vital staining of the sperm cells but never was able to learn any more by the use of this method than by the simple examination of the unstained cells. Besides, I never felt sure that the stain might not have affected the spermatozoa.

30 East Fifty-Eighth Street.

14. Hammond and Asdell (footnote 7). Sanders: J. Agr. Sc. **16,** 1926.
15. Moench, G. L.: J. Obst. & Gynec. **17:** 53 (July) 1929.

The Art and Science of Medicine.—Science is exacting. It is interested in diagnosis first, and treatment last. That is perfectly proper when it can be done. But the unscientific mind does not grasp the idea. Most of our patients are wholly unscientific and are looking only for relief. . . . Even in cases where scientific methods are used to the best advantage, much can be done to add to the happiness of the patient and his family by the application of art.—Gunn, F. H.: Medical Education, *Illinois M. J.*, December, 1929.

BLOOD DEXTROSE DETERMINATIONS

A STATISTICAL COMPARISON OF THE FOLIN-WU METHOD AND THE BENEDICT MODIFICATION OF THE LEWIS-BENEDICT METHOD *

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That there is dissatisfaction with the present methods of blood sugar estimation is evident from the numerous methods that have been presented, as well as the frequent modifications of each of them. The estimation of blood sugar is a clinical necessity that should be carried out far oftener than it is at present, but to do this the method should be simple, reliable and inexpensive in both time and material. The amount of blood required should be small, not more than 0.2 cc.; preferably 0.1 cc. should suffice for a check. The clinical use of the patient's veins has so increased for the administration of medication that both patient and physician look askance at the pathologist who asks for blood from the scarred and thickened vessels. Having encountered difficulties with Folin's ferrocyanide method partly because of its small range, we decided, preliminary to further study, to compare and ascertain the accuracy of two of the methods for blood sugar estimation most in use.

A review of the literature of the past fifteen years reveals a considerable difference of opinion as to the comparative value of the picrate and copper blood sugar methods. Baumann and Isaacson [1] note that "the work of the Harriman Research Laboratory investigators raised serious objections to the use of any picric acid method when another procedure is available." Osterberg and Strunk [2] found the new Benedict method the more accurate except in high sugar values. While the view has been expressed that creatinine gives five times the color value of an equal weight of dextrose with picrate, Myers [3] observed that the color was equal, and therefore of no clinical import in ordinary samples of blood. Oser and Karr [4] found the Folin-Wu method high below and low above the standards. Duggan and Scott's [5] determinations showed the Folin-Wu method accurate for from 25 to 275 mg., with the greatest error 1.6 per cent in the upper range. They found the Benedict modification of the Lewis-Benedict method accurate within 1.3 per cent inside 25 per cent from the standard used. Rothberg and Evans [6] noted that the Folin-Wu method was high up to 484.2 mg. of dextrose experimentally determined from 400 mg. of actual dextrose content. Apparently no paper was based on a statistical study, and indeed most of the figures given in all the papers in the literature are based on more or less numer-

* Read before the Section on Pathology and Physiology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.

1. Baumann, E. J., and Isaacson, R. L.: An Adaptation of the Folin and Wu Blood Sugar Method Applicable to Small Amounts of Blood, J. Lab. & Clin. Med. **7:** 357 (March) 1922.
2. Osterberg, A. E., and Strunk, J.: A Comparison of the Folin-Wu and the New Benedict Method for the Estimation of Blood Sugar, J. Lab. & Clin. Med. **12:** 278 (Nov.) 1926.
3. Myers, V. C.: Chemical Changes of the Blood in Disease, J. Lab. & Clin. Med. **5:** 640 (June) 1920.
4. Oser, B. L., and Karr, W. G.: The Correction of Folin-Wu Blood Sugar Values, J. Biol. Chem. **67:** 319 (Jan.) 1926.
5. Duggan, W. F., and Scott, E. L.: A Critical Examination of Four Methods Commonly Used for the Determination of Sugar in Blood, J. Biol. Chem. **67:** 287 (Jan.) 1926.
6. Rothberg, V. E., and Evans, F. A.: Studies with the Folin-Wu Blood Sugar Determination, J. Biol. Chem. **58:** 435 (Dec.) 1923.

ous samples of blood from the usual run of patients. It seems to be accepted that creatinine, acetone and other bodies present in the blood filtrates, as well as dextrose, reduce picric acid while not affecting the copper solution of Folin and Wu. Though the amount of this reduction may be negligible clinically, we decided to compare the two methods with stepped amounts of pure dextrose in distilled water. Nor were we long in doubt as to the value of a statistical study. With the first few determinations, rough preliminary curves showed waves in the Benedict method which we accounted for theoretically as due to variable mass action in the reducing power of the dextrose. With increasing numbers of determinations these interesting waves were flattened out to the curve as shown in chart 1.

All the procedures in this study were carried out in accordance with the directions given in the 1921 edition of Underhill's Manual of Selected Biochemical Methods.

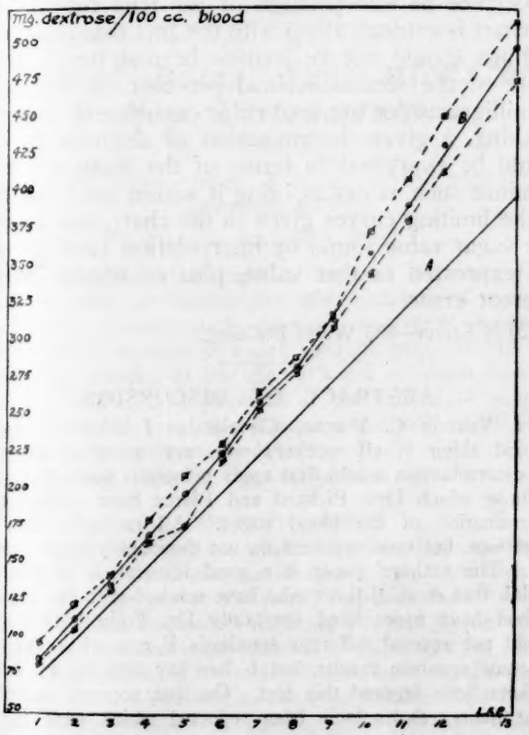

Chart 1.—Benedict modification of the Lewis-Benedict method: *A*, actual dextrose content; *B*, experimental dextrose. In the charts the dotted lines represent maximum and minimum values.

All the glass measuring pipets and flasks, other than the special tubes of the Folin type and the dilution tubes for the Benedict modification were certified and stamped as correct by the U. S. Bureau of Standards. All chemicals were J. T. Baker C. P. Analyzed except the dextrose, which was the pure grade of the Eastman Kodak Company. The dextrose was weighed accurately to 2 in the fourth decimal place. Solutions were made with dextrose concentrations ranging from 75 to 400 mg. per hundred cubic centimeters, which were then analyzed according to the proper directions for each method. Twelve determinations were made from each sugar concentration, which totaled thirteen in each method, a final total of 156 analyses per method, a number sufficient to warrant study and analysis of the results in the light of statistical mathematics.

The colorimeter used was a Klett-Kober with artificial lighting, glass screen and independent milk glass reflectors. The machine was checked for zero adjustment and standards were absolutely matched against one another and themselves every day in order that the reflectors might be in perfect adjustment. All readings were made by a single individual, sufficient time being taken to rest the eyes in every determination and to get a color match satisfactory to both eyes.

Results of Blood Sugar Determinations with Various Procedures *

Concentration Mg. per 100 Cc.	Unknowns, Low Standard Set at 15	Mean Dextrose	Colorimeter Error Eo	Colorimeter Error E
	Folin-Wu			
75	20.7, 21.0, 22.8, 21.2, 21.9, 22.1, 22.2, 22.0, 22.0, 21.5, 22.5, 21.4	68.8	±0.115	±0.398
100	14.6, 15.0, 15.0, 14.8, 15.1, 15.0, 15.2, 15.0, 15.0, 15.1, 14.7, 15.0	100.2	±0.033	±0.117
125	12.6, 12.4, 12.7, 12.6, 12.6, 12.6, 12.6, 12.0, 12.6, 12.5, 12.7, 13.0	119.3	±0.045	±0.188
150	9.0, 9.3, 9.0, 9.0, 9.0, 9.0, 9.3, 9.0, 9.0, 9.0, 9.0, 8.8	166.1	±0.027	±0.086
175	6.6, 6.6, 6.7, 6.5, 6.6, 6.7, 6.5, 6.6, 6.4, 6.6, 6.5, 6.6	228.2	±0.017	±0.059
	High Standard Set at 10			
200	9.2, 9.3, 9.1, 9.0, 9.3, 9.7, 9.4, 8.9, 9.0, 9.3, 9.0, 10.1	212.4	±0.072	±0.059
225	8.1, 7.9, 8.1, 8.0, 7.6, 7.8, 7.7, 8.0, 8.1, 7.9, 7.7, 8.1	252.8	±0.035	±0.122
250	7.0, 7.1, 7.5, 6.8, 7.2, 7.2, 7.3, 7.0, 7.5, 7.0, 7.0, 7.2	279.8	±0.041	±0.143
275	6.5, 6.3, 6.3, 6.2, 6.2, 6.1, 6.0, 6.0, 6.2, 6.2, 6.6, 6.3	320.0	±0.035	±0.120
300	5.6, 5.4, 5.8, 5.7, 5.6, 5.5, 5.7, 5.4, 5.5, 5.5, 5.5, 5.7	359.0	±0.026	±0.089
325	5.3, 5.3, 5.4, 5.6, 5.1, 5.1, 5.4, 5.3, 5.1, 5.4, 5.0, 5.3	380.8	±0.034	±0.117
350	5.0, 4.8, 4.9, 4.9, 4.8, 4.6, 4.7, 4.7, 4.9, 4.9, 4.9, 4.6	415.8	±0.026	±0.088
400	3.9, 4.0, 4.1, 4.1, 4.0, 4.1, 4.2, 4.2, 4.0, 4.0, 4.4, 3.9	482.6	±0.04	±0.139
	Benedict Modification of Lewis and Benedict			
	Dilution 12.5. Standard Set at 15			
75	15.2, 17.2, 16.8, 17.7, 17.1, 17.9, 18.1, 17.3, 17.9, 17.5, 17.2, 17.3	87.2	±0.148	±0.514
100	12.2, 14.4, 13.5, 14.1, 13.9, 13.2, 13.7, 13.5, 13.9, 14.0, 13.4, 13.5	113.6	±0.138	±0.48
125	11.2, 11.2, 10.8, 10.7, 10.5, 10.9, 11.0, 11.2, 11.2, 10.8, 11.1, 10.9	137.5	±0.048	±0.158
150	8.9, 8.8, 8.8, 8.6, 8.8, 8.9, 9.3, 8.7, 8.7, 8.8, 8.4, 8.3	171.4	±0.049	±0.171
175	7.5, 7.3, 7.7, 7.4, 7.1, 7.3, 7.5, 7.3, 7.8, 8.5, 8.5, 7.5	197.3	±0.089	±0.307
	Dilution 25. Standard Set at 15			
200	13.6, 13.5, 13.2, 12.9, 13.4, 13.2, 13.5, 13.4, 13.3, 13.3, 13.2, 13.6	225.6	±0.044	±0.151
225	11.7, 11.4, 11.2, 11.3, 11.6, 11.5, 11.6, 11.7, 11.5, 11.5, 11.4, 11.6	260.8	±0.030	±0.103
250	10.5, 10.3, 10.4, 10.5, 10.7, 10.5, 10.5, 10.5, 10.7, 10.6, 10.7, 10.7	284.4	±0.026	±0.089
275	9.6, 9.4, 9.4, 9.4, 9.5, 9.5, 9.5, 9.5, 9.6, 9.6, 9.6, 9.5	315.8	±0.015	±0.053
300	8.0, 8.2, 8.1, 8.3, 8.5, 8.2, 8.5, 8.6, 8.2, 8.4, 8.4, 8.3	361.4	±0.035	±0.120
325	7.4, 7.5, 7.3, 7.5, 7.6, 7.6, 7.7, 7.5, 7.8, 7.7, 7.5, 7.5	394.6	±0.027	±0.093
350	7.0, 6.6, 7.1, 6.9, 6.8, 6.7, 6.7, 7.2, 6.7, 6.8, 6.9, 7.0	434.8	±0.036	±0.123
400	5.8, 5.9, 5.9, 6.1, 6.0, 6.3, 5.9, 6.2, 5.9, 5.8, 6.1, 6.3	498.2	±0.035	±0.121

* The probable errors were calculated in all cases by the method of least squares. Those interested in this detail are referred to Plane Surveying, by Tracy. The formulas involved are as follows:

$E = 0.8453 \Sigma\, v/\sqrt{n\,(n-1)}$ which is the probable error for any single observation.

$E_0 = 0.8453 \Sigma\, v/n\sqrt{n-1}$ which is the probable error for the mean of all observations.

v = difference of observation and mean.
0.8453 = a constant.
n = number of observations.

Checks on blood filtrates with added dextrose corresponding to these concentrations were not made in sufficient number to be statistically considered at this time.

The tabulated data presented here are also shown graphically for clarity and convenience in checking routine laboratory determinations of dextrose in blood.

The formulas are based on the following assumptions: (1) small errors are more frequent than large; (2) plus and minus errors are equally frequent; (3) very large errors do not occur.

The probable errors of the means of the Folin-Wu method range from ± 0.147585 to ± 0.0168909 in terms of colorimeter readings, which as may readily be seen correspond to very tiny differences in dextrose. This very smallness of probable error of the mean definitely points to accuracy in carrying out the determinations. This is further supported by the fact that the probable error of any one determination ranges from ± 0.3983208 to ± 0.0585 in terms of colorimeter readings, which values again are so small as to point clearly to accurate procedure. Any one determination is probably at or near the mean; but there is one chance in

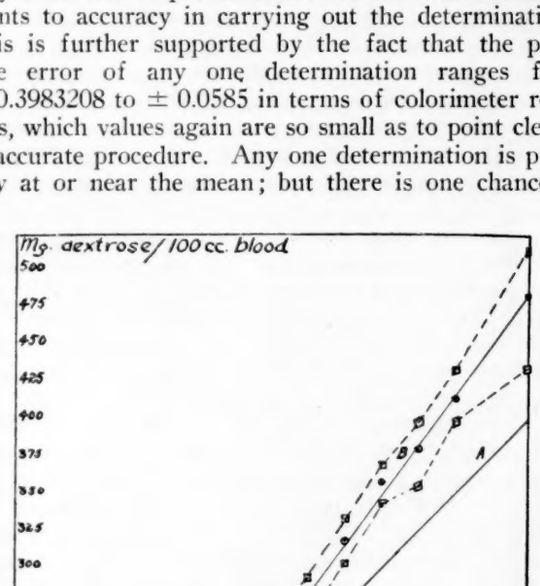

Chart 2.—Folin-Wu method: *A*, actual dextrose content; *B*, experimental dextrose. Low standard, 1 to 5, inclusive; high standard, from 6 on.

twelve that it may lie at the upper limit and one in twelve that it may lie at the lower limit of the area bounded by the two limit curves. The same truth is even more clearly exemplified in the case of the Benedict modification of the Lewis-Benedict method, with probable errors of the means ranging from ± 0.1481 to ± 0.0154381 in terms of colorimeter readings and the probable errors for any one determination ranging from ± 0.514 to ± 0.0534. Thus the errors of operation are shown statistically to be very small and it follows that the wide divergence between experimental and true values can be accounted for only by errors inherent in the methods themselves.

While the Benedict method checked clinically with the Folin-Wu method in pure dextrose solutions, in blood filtrates other reducing bodies add to the apparent dextrose and this is especially true in certain disease conditions. Hence the Folin-Wu method is the more reliable of the two methods. It should, however, be used with precaution. As shown by the cusp in the curve, the unknown should always be checked against the high standard for blood sugar concentrations in excess of 150 mg. per hundred cubic centimeters and in excess of 300 mg. greater accuracy will be obtained by dilution of the filtrate and the use of the high standard. This further dilution will add to the usefulness of the micromethods based on the Folin-Wu technic, 0.1 cc. of blood being used, an amount easily obtained by skin puncture.

As shown in chart 2, the Folin-Wu blood sugar method with 200 mg. of dextrose gives an average error of reading 6 per cent too high, with a maximum of 12 per cent high and a minimum of 1 per cent low. At 400 mg. the error of the average reading has increased to 20 per cent too high, with the maximum 28 per cent and the minimum 8 per cent high. The importance of interpolation of the true reading from the chart is evident, along with the fact that blood sugar readings should not be written beyond the significant figure of the second decimal per cent, or the nearest 10 milligrams per hundred cubic centimeters. Generally speaking, a given determination of dextrose in blood should be expressed in terms of the mean value plus or minus such values as bring it within the error range of the limiting curves given in the chart, and then, the true sugar value found by interpolation from the chart and expressed as that value, plus or minus the same inherent error.

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ABSTRACT OF DISCUSSION

DR. VICTOR C. MYERS, Cleveland: I think it would be a good thing if all workers who are going to carry out any determination would first apply principles somewhat similar to those which Drs. Pickard and Pierce have applied to the determination of the blood sugar. All methods have their limitations, but most workers do not thoroughly appreciate that fact. The authors' paper is a good illustration of this point. I think that most of those who have worked with the Folin-Wu method have appreciated (certainly Dr. Folin has) that one should use several different standards if one wishes to obtain the most accurate results, but I dare say that the majority of workers have ignored this fact. On that account, probably, a great many results have been reported which were too high because, after all, a clinician is interested chiefly in diabetic blood. If he obtains a blood sugar reading that is a little too high, often he will not go to the trouble of preparing another standard and making the determination again, although this is a comparatively easy thing to do. I have always felt that it does not matter so much what blood sugar method we use. The Folin-Wu method has been used so long now and is so satisfactory that perhaps it should not be abandoned, but we should appreciate that the Folin-Wu method gives results that are too high. The Benedict modification of the Lewis-Benedict method, which Drs. Pickard and Pierce employ, likewise gives results that are too high, probably higher than the Folin-Wu method. The figures for the Folin-Wu method are probably about 22 mg. above the figures for the true dextrose. In practical work, however, one does not care whether one has 100 mg. or 80 mg. It is merely a scientific affair. But we should appreciate that the older methods, and I refer to the Folin-Wu and Benedict (trinitrophenol) methods, do give results that are a little too high. Dr. Folin and Dr. Benedict recently have suggested methods that apparently give readings close to the true blood sugar, but their new reagents are more complicated. I do not believe that at the present time I would suggest replacing the Folin-Wu method with either Folin's or Benedict's modification of it. I do think that it is important now and then to check over our methods as Drs. Pickard and Pierce have done.

DR. LEO F. PIERCE, San Diego, Calif.: Dr. Myers has said that not only are more standards needed with the Folin-Wu method but more methods are needed. It must also be recognized that the interpolation must be made and the results expressed as plus or minus within the natural error that is inherent in the method. Closer results, closer expressions than that, are utterly ridiculous. The literature for fifteen years has been simply seeded with statements of the most utterly loose character imaginable. When the author says, "Our curve has been straightened," his statement is distinctly open to question. The last thing that Dr. Myers mentioned was particularly interesting. He suggested that Folin's new method might possibly be better. I should like to point out one thing. Folin's new method is based on suspending a more or less insoluble precipitate. This precipitate is colored. It is suspended by means of a protective colloid, and in suspending this precipitate by means of a protective colloid one has particles that are above true molecular dimensions. Therefore, one is not truly measuring color but instead is approaching the field of nephelometry. Any one who has worked with that realizes the pitfalls and dangers, so that I fear we cannot hope for too much in the way of accuracy from Dr. Folin's new method.

Clinical Notes, Suggestions and New Instruments

SPINAL DEFORMITY AS CAUSE OF CARDIAC HYPERTROPHY *

WILLIAM D. REID, M.D., BOSTON

Finley [1] reported four cases of extreme deformity of the thorax resulting in hypertrophy and dilatation of the heart with cardiac insufficiency. Another observer [2] reports the reverse of this sequence in a girl, aged 14, who acquired rheumatic mitral stenosis at the age of 3 and in whom increasing deformity of the spine appeared at the age of 10 years. I reported a possible case of the sequence pointed out by Finley, in the first edition of my book.[3]

The case now reported here is, perhaps, more convincing:

REPORT OF CASE

History.—A girl, aged 16, was admitted to the hospital, May 10, 1928, in an orthopneic, markedly cyanosed condition, with edema of the legs, lower abdominal wall and face.

There had been dyspnea on moderate exertion during the past few months, and occasional attacks of palpitation in the last three or four years. Two weeks before entrance the dyspnea had increased, and swelling of the legs, abdomen and face and an unproductive cough had appeared. She had been forced to sit up for the past four nights because of dyspnea.

The patient suffered a severe attack of anterior poliomyelitis at the age of 2 years. Marked deformity of the thorax and contractions of the limbs had gradually developed since the illness at 2 years of age. She had been unable to walk for some years.

Physical Examination.—The patient appeared poorly nourished and much deformed, markedly cyanotic and orthopneic. The thorax was markedly deformed with a scoliosis and anteroposterior convexity.

The cardiac impulse was weakly palpable in the sixth interspace at the left midaxillary line; percussion showed that the left border of deep cardiac dulness was at the same point. The right border of percussion dulness was 1 inch to the right of the midsternal line. There was a systolic thrill over the apex impulse, and a loud blowing systolic murmur maximal at the apex, audible over the entire precordia. There was also a low pitched diastolic murmur at the apex. The action was regular and the rate 120.

Moist crepitant râles and dulness were present at both bases and to a lesser degree throughout both lungs. The abdomen was distended; a fluid wave was present. There was moderate edema of the legs, lower abdominal wall and face.

The temperature was 99.6 and respiration 25. The remainder of the physical examination did not elicit any important departures from the normal.

Hemoglobin was 70 per cent; the white count was 12,000, with 67 per cent polymorphonuclears, 31 per cent lymphocytes and 2 per cent endothelials.

An electrocardiogram showed simple tachycardia with a rate of from 140 to 145; the P-R interval was 0.14 second; the Q-R-S 0.06 second, and P_2 0.3 millivolt; there was right axis deviation at an angle of +113 degrees. This indicated the normal mechanism of the heart beat at an accelerated rate. Preponderating hypertrophy was probably present.

Course.—The patient did not improve under treatment; the pulse rose to 140, and the respiratory rate to 60. Death ensued twenty-four hours after admission.

Autopsy.—The pathologic diagnosis was bronchopneumonia (bilateral), kyphosis, hypertrophy of the heart, chronic passive congestion of the liver and kidneys and ascites.

The heart weighed 255 Gm. The pericardium was normal. The myocardium appeared normal in color and in consistency. The right ventricular wall showed marked hypertrophy and was practically the same size as that of the left ventricle; they both measured about 1 cm. in thickness. The valves were normal.

Microscopically, moderate chronic fibrous endocarditis and myocarditis were apparent.

COMMENT

My former case [3] in a man, aged 51, with auricular fibrillation and congestive heart failure, did not appear convincing because of the obvious possibility that other factors might have caused the cardiac disease. This 16 year old girl, however, presented a picture more closely resembling that described by Finley.[1] A presumptive diagnosis of mitral stenosis and therefore of rheumatic heart disease was made but was not confirmed by the autopsy. Cardiac hypertrophy and congestive heart failure were present. The disclosure of pneumonia was a surprise; it is emphasized that examination of the chest was limited because of the grave condition of the patient.

The autopsy notes unfortunately do not describe the course of the aorta in this girl, so it is impossible to state whether the aorta or the pulmonary artery was unduly kinked or narrowed, as noted by Finley [1] in his cases.

The association of cardiac hypertrophy and dilatation is not new. Finley [1] points out that there is practically no mention of it in English and American medical literature, but there are a number of foreign reports. It was recorded as long ago as 1828. Bachman found that, in 268 necropsies of patients with high grade scoliosis or kyphosis, 66 per cent showed hypertrophy and dilatation of the heart. For a further review of the literature and a discussion of the mechanism by which spinal deformity induces cardiac changes, the reader is referred to Finley's [1] article.

Although skeptical at first, I am now of the opinion that high grade spinal deformity may have a deleterious effect on the heart. There is therefore additional reason for efforts to prevent or lessen such deformities. The possibility of the development of cardiac injury should be emphasized to the orthopedists, and patients should be encouraged to undergo the prolonged treatment necessary to prevent high grade spinal deformity.

SUMMARY

In the case reported here, cardiac hypertrophy and dilatation were associated with marked spinal deformity. This association appears to have been largely ignored in Anglo-Saxon medical literature.

The possibility of the development of serious impairment of the heart is an additional reason for the adequate use of orthopedic measures to prevent or lessen high grade deformities of the spine.

* From the Evans Memorial Hospital and Boston University School of Medicine.

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2. Lee, H. G.: Rotarolateral Curvature of the Spine Secondary to Hypertrophy of the Heart, New England J. Med. **199**: 78 (July 12) 1928.
3. Reid, W. D.: The Heart in Modern Practice, Philadelphia, J. B. Lippincott Company, 1923, p. 426.

VARICELLA GANGRENOSA DUE TO BACILLUS DIPHTHERIAE, WITH A CARDIAC COMPLICATION

JOHN ZAHORSKY, M.D., ST. LOUIS

The condition reported here is exceedingly rare, and the case with its complications offers some interesting suggestions from a diagnostic point of view. The patient was seen several times in consultation with Dr. H. E. Markwort.

C. K., a boy, aged 7 years, well nourished, with healthy, educated and fairly well to do parents, living in good surroundings in a modern home with plenty of sunshine, was taken sick, June 18, 1929, with chickenpox. The lesions were rather profuse but the general symptoms were mild. Before this illness he had often complained of pains in his legs, had a poor appetite and seemed a little pale. He had not had any attack of sore throat, coryza or bronchitis for several months. There had been no nasal discharge of any kind.

Three days after the onset of the chickenpox, two blisters appeared on the back of the neck and healed with simple antiseptic applications. About four days after the onset a large bleb appeared over the middle and outer side of the right leg. This enlarged and became black. The varicellar lesions over the rest of the body healed normally. The child, however, had a slight fever every day, was languid and drowsy, and had no appetite. On the fourteenth day he vomited several times.

I saw him first, July 4, on the fifteenth day of his illness. I was struck at once by his pallor and general prostration. The temperature was 100.2 F. Physical examination showed a large necrotic ulcer of the right leg about 1½ inches (38 mm.) long, covered by a black crust. This was surrounded by a pale, moist areola one-half inch (12 mm.) wide. The skin in several places still showed some crusts of convalescent chickenpox.

The inguinal glands on the right side seemed larger than on the left. There was no general adenopathy. The spleen was not palpable, but the liver seemed enlarged. The nose and the throat were perfectly normal, without discharge or exudate. Considerable weakness of the left arm and leg was present, suggesting a nerve lesion. The pulse was feeble but not unusually rapid. The heart impulse was located in the mammillary line. On auscultation the heart showed a typical gallop rhythm. The urine contained albumin, many cells and a few casts.

The weakness of the arm and leg, and the condition of the heart did not improve in two days, and this suggested to me that a diphtheritic poison was the cause. A culture of the ulcer was taken by Dr. Markwort and sent to the city bacteriologist. The culture showed the presence of diphtheria bacilli, and a virulence test demonstrated that they were extremely virulent. We injected 15,000 units of diphtheria antitoxin intramuscularly. The heart was stimulated with caffeine and small doses of nux vomica.

The necrotic ulcer improved, but not the general symptoms. The heart did not improve and the pulse became slower (86), but the first sound was feeble and reduplicated, and the second sound accentuated. Death was preceded by a sudden high temperature and convulsions. No necropsy was made.

This curious syndrome, a polyneuritis accompanied by a myocarditis, which suggested that the gangrenous ulcer might be diphtheritic, emphasizes a practical lesson: in every case of varicella gangrenosa a dose of diphtheria antitoxin should be injected on the first appearance of the symptoms. I am well aware that in only a few cases has *Bacillus diphtheriae* been found in the gangrenous lesions of varicella, but the serum can do no harm even in cases not caused by diphtheria.

In a fatal case of gangrenous chickenpox reported by Alexander Joe,[1] *Bacillus diphtheriae* was isolated from the nose during life. The baby, aged 13 months, had several gangrenous areas on the skin following chickenpox. A blood stained discharge appeared from the nose and 2,000 units of diphtheria antitoxin was administered. The gangrene became worse and death ensued. A culture made from the necrotic areas after death demonstrated the presence of a virulent strain of *B. diphtheriae*. The case reported here is singular in that no nasal or faucial diphtheria was present in the patient or in any members of the family.

536 North Taylor Avenue.

1. Joe, Alexander: Brit. J. Dis. Child. **25**: 111 (April-June) 1928.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

FARASTAN NOT ACCEPTABLE FOR N. N. R.

Farastan is the name under which the Farastan Company, Philadelphia, markets a preparation of iodine and cinchophen claimed to be mono-iodo-cinchophen, a "new chemical complex," containing approximately 33.6 per cent of iodine. The preparation is recommended for use in "Arthritis . . . Rheumatoid and Neuritic conditions." It is claimed as the main advantage of Farastan that when the preparation is administered the "Iodine . . . is set free as such, never as hydriodic acid." If this is true, it would have no advantage, since iodine is converted into iodide before it is absorbed; and it may be deleterious, if the iodine is liberated rapidly enough to produce local irritation.

There is no evidence that the routine use of cinchophen and iodide in fixed proportions (or in any proportions) is desirable or rational. Usually, the conditions that require cinchophen do not require the simultaneous administration of the iodides, and vice versa. If they are used together, the dose of the iodide must be adjusted according to other principles than that of the cinchophen. It appears particularly undesirable and even dangerous to encourage the routine prescribing of cinchophen, which should be used only for short periods, with an iodide compound, which must be continued over long periods. If the administration of iodide together with cinchophen should be indicated or desirable, these can be given separately.

The Council declared Farastan unacceptable for New and Nonofficial Remedies because it is an irrational preparation marketed with unwarranted therapeutic claims.

ANTISTREPTOCOCCUS SERUM OMITTED FROM N. N. R.

For some years the Council has been questioning the value of antistreptococcus serum preparations. These products have been retained in New and Nonofficial Remedies with the caution that on the basis of clinical reports there is perhaps justification for the use of the serum in streptococcus infections, but that there is no scientific basis for it. To obtain an estimate of the esteem in which antistreptococcus serum was held by clinicians, Dr. Emil Novak at the request of the Council sent a questionnaire to a number of surgeons, gynecologists and obstetricians. The Council considered the report prepared by Dr. Novak on the basis of the information which he obtained (report on Antistreptococcus Serum, THE JOURNAL, Jan. 16, 1926, p. 189) and endorsed its publication. In consideration of the opinions contained in Dr. Novak's report, the Council decided to retain antistreptococcus serum preparations in New and Nonofficial Remedies provisionally.

When considering the reacceptance of products in 1928, the Council again questioned the value of antistreptococcus serum preparations and voted that unless new and favorable evidence (aside from the Novak report) became available, all streptococcus serum preparations should be omitted from New and Nonofficial Remedies with the close of 1929. Since no such new evidence has become available, the Council voted to confirm its action and to omit all streptococcus serum preparations as follows: Antistreptococcic Serum (Gilliland Laboratories, Inc.); Antistreptococcic Serum, Polyvalent (Lederle Antitoxin Laboratories); Antistreptococcic Serum (Eli Lilly & Co); Antistreptococcic Serum, Purified and Concentrated (Lilly); Antistreptococcic Serum, Polyvalent (H. K. Mulford Company); Antistreptococcic Serum (National Drug Company); Antistreptococcic Serum (Parke, Davis & Co.); Antistreptococcic Serum-Squibb.

COMMITTEE ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

EUGENE F. DU BOIS.
W. MCKIM MARRIOTT.
LAFAYETTE B. MENDEL.
H. C. SHERMAN.
MORRIS FISHBEIN, Chairman.

BORDEN'S EVAPORATED MILK

Manufacturer.—The Borden Company, New York City.

Definition.—Evaporated milk is defined by the United States Department of Agriculture as: "The product resulting from the evaporation of a considerable portion of the water from milk, or from milk with adjustment, if necessary, of the ratio of fat to nonfat solids by the addition or by the abstraction of cream. It contains not less than seven and eight tenths per cent (7.8%) of milk fat, nor less than twenty-five and five tenths per cent (25.5%) of total milk solids; provided, however, that the sum of the percentages of milk fat and total milk solids be not less than thirty three and seven tenths (33.7%)."

Composition.—Borden's Evaporated Milk has the following average composition:

Fat	7.85%
Protein	6.88%
Carbohydrates	9.67%
Ash	1.55%
Total solids	25.95%
Water	74.05%

Process of Manufacture.—Whole milk produced from healthy cattle under carefully supervised sanitary conditions is brought to the condensery. Immediately on delivery it is subjected to thorough inspection. The necessary laboratory tests are made and it is then standardized so as to conform to the required state and federal standards. The first step in the transformation of raw milk into evaporated consists in heating it either by injecting live steam into the vat of milk or by passing the milk through a heated coil. The temperature of heating is from 200 to 212 F. and the time required must necessarily be varied, as this is an important factor which affects the physical qualities of the milk after it has been sterilized. After the preheating has been completed, the hot milk is drawn into a vacuum pan where it is concentrated until about 60 per cent of the water is removed. This is done at a low temperature varying from 120 to 135 F. From the vacuum pan the milk is pumped through an homogenizer under a pressure of approximately 3,000 pounds. This serves the purpose of reducing all of the fat particles to a small size, thereby preventing the separation of the butter-fat after sterilization. The homogenized milk is then cooled and transferred to a refrigerated storage tank. Further laboratory tests are made to make certain that it meets the required standard. It is then run, by means of mechanical filters, into the can, and immediately sealed and sterilized. The sterilizing process consists of placing the cans in a steam sterilizer, where they receive a temperature of from 234 to 245 F. for a period varying from twenty to thirty minutes. As the physical condition of the product is dependent on the time and temperature of sterilization, care must necessarily be exercised in conducting the sterilizing process. The cans are immediately chilled, withdrawn from the sterilizer, and placed in storage for a minimum period of ten days. Each can is then examined to determine whether any "leakers" are present. A "leaker" is known in the trade as a can in which the seams have been imperfectly made, thereby permitting bacteria to enter after sterilization. To prevent the marketing of such cans they are examined after the required storage period of ten days. All cans found to be satisfactory are then suitably labeled, packed and ready for the market.

Uses.—Borden's Evaporated Milk is advertised for infant feeding to the medical profession only and in women's magazines for household use and in making milk convenient for cooking. It is claimed that the milk is clean and sterile; that it resembles breast milk in ease of digestion because it is so homogenized that the fat never causes disturbances as in ordinary cow's milk and that it produces fine flocculent curds. It is claimed that it contains the natural fats, proteins, lactose, minerals and all vitamins normally present in milk except vitamin C.

CREAM OF WHEAT

Manufacturer.—Cream of Wheat Company, Minneapolis.

Definition.—Cream of Wheat is a product made entirely from wheat. The raw material is taken from the first break rolls of the flour mill, is purified, repurified, heat treated or sterilized to remove the possibility of the germination of any insect life, and packed in triple sealed and double-wrapped heavy cardboard containers, in which form it reaches the consumer's kitchen. It consists of the endosperm of the wheat, with only so much of the bran and germ as it is impossible to remove in the milling and purification process.

Uses.—1. Rich in energy content. 2. Easy digestibility. The manufacturer claims: "School tests show that the child who eats a hot cereal breakfast is better prepared mentally and physically to do good work."

GERBER'S STRAINED VEGETABLE PRODUCTS

Manufacturer.—Gerber Products Division, Fremont Canning Company, Fremont, Mich.

Brands.—Gerber's Strained Spinach, Strained Carrots, Strained Green Beans, Strained Peas, Strained Prunes, Strained Tomatoes and Strained Vegetable Soup.

Process.—Specially selected vegetables, steam pressure cooked, sterilized at high temperature and specially packed.

Uses.—The manufacturer claims: "By excluding the air and cooking under steam pressure without water we are able to effect a greater conservation of the rich mineral salts and vitamin elements than is possible when the same vegetables are cooked in the presence of oxygen in open vessels. Particularly this conserves the important vitamin C, in which pasteurized milk is deficient and which vitamin is so susceptible to heat destruction when oxygen is present. . . . Gerber's Strained Vegetable Soup is based on a professional formula and contains barley, rice, carrots, spinach, beef, celery, tomatoes and peas. . . . Affords the variety required for a balanced vegetable feeding schedule rich in tooth, bone and body building vitamins."

THE NEW PETTIJOHN'S

Manufacturer.—The Quaker Oats Company, Chicago.

Composition.—Whole wheat grain.

Process.—Is made by steaming and flaking a choice wheat which has a tender bran. The bran is included with it in unground form—the form in which bran is most effective; and the thorough cooking in the home so softens and moistens the bran that it does not harm the sensitive intestinal tissues.

Uses.—Contains all the nutritive elements of whole wheat. It contains carbohydrates for heat and energy, protein for building and repair of bone and muscle, the various mineral salts, iron for the blood, lime for the bones and teeth, and vitamins.

POST'S BRAN FLAKES WITH OTHER PARTS OF WHEAT

Manufacturer.—Postum Company, Inc., Battle Creek, Mich.

Patents.—These cereal flakes are made under the patent to Jonathan K. Lippen, number 1483515, Feb. 12, 1924. The trade mark Post's Bran Flakes with other parts of Wheat (registered, U. S. Patent Office) indicates the manufacture of Postum Company, Incorporated.

Composition.—Bran flakes with other parts of wheat deliciously flavored with malt syrup and salt.

Uses.—Combines the advantage of wheat bran, including essential mineral elements in a nourishing and appetizing food. Provides phosphorus, iron and vitamin B, recognized dietary essentials; proteins and carbohydrates, affording high food value in easily digestible form.

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SATURDAY, FEBRUARY 15, 1930

THE UNDERNOURISHED CHILD OF SCHOOL AGE

Pathology, etymologically, is the science of suffering. The content of its subject matter has become much broader than the word itself. It includes not only those conditions which may cause suffering but also all deviations from the normal. Before it is possible to say that a state is abnormal or pathologic, it is necessary to determine what is normal. For actual morphologic tissue changes, this determination is relatively easy, but for states that are not associated with detectable tissue alterations it is necessary to determine the normal mean together with the deviations above and below the mean which may be considered to fall within the range of normal variation. When the deviation exceeds the accepted limits of variation, it remains to be determined whether a condition of morphologic or functional abnormality exists.

Excessive deviation beyond the limits of variation accepted as normal for weight in relation to height, age and sex is frequent. Height, age, sex and race are important in determining the normal weight standards. Other factors may play a part; heredity seems to be one such factor. Overweight or underweight of degrees great enough to be considered abnormal may be associated with disturbed endocrine functioning. There remain, however, many examples of overweight and underweight that cannot be explained by endocrine dysfunction, heredity or any of the factors that affect the normal variations of weight.

In children of prepubertal school age, underweight and an evident state of undernutrition are not uncommon and are often a source of worry to parent, teacher and physician. Investigation of the individual case may show the undernourished state to be due to chronic infection, to poor diet or to improper food habits. In a considerable proportion of undernourished children, a cause for the nutritional state cannot be detected. They do not exhibit anatomic abnormalities other than those that are a part of or the result of the undernourished state itself. Do they reveal any functional abnormalities to which the nutritional state may be ascribed? The Elizabeth McCormick Foundation of Chicago has been engaged for a number of years in practical work, in the public schools and in the homes, aimed at overcoming the undernourished condition of school children. Many children who had no physical defects that might cause undernutrition failed to make a satisfactory gain in weight. Study of such refractory cases was undertaken by the Nelson Morris Institute for Medical Research of Chicago, at the suggestion of and with the financial support of the foundation. The results of this investigation, which was planned to cover a five year period, have been presented in a series of papers by Chi Che Wang [1] and her co-workers. The series of communications is an important contribution to our knowledge of the energy and chemical metabolism of the child of school age.

Thorough physical examination by the staff of the Sarah Morris Hospital for Children, to which the children were admitted for prolonged and continuous study, excluded physical abnormalities other than the condition of underweight. The children taken for study were selected from those in whom the workers of the Elizabeth McCormick Foundation had found it impossible to bring about a gain in weight. A group of normal children, studied in the same way as were the underweight ones, served as controls for the latter. One of the earliest results of the investigation, and one that was repeatedly confirmed throughout its course, was that the children, although they had proved refractory to the methods pursued in school and in the home, could be made to show a progressive and satisfactory gain in weight under the conditions of the investigation. The increase in weight, however, required such constant supervision by a trained dietitian of each meal taken by the child as to make it appear doubtful whether the result that may be obtained is worth the effort that must be expended to bring it about, since serious nutritional abnormalities could not be detected during the course of the further work.

There was no significant deviation in the basal metabolism of the underweight children. The metabolic rate of the normal controls, when calculated according to height, was found to be from 10 to 15 per cent higher than the Benedict standards. That of the undernourished children was slightly lower than that of the normals. A similar but somewhat greater decrease in basal metabolism has been found by others in the normal adult during starvation or fasting. The absorption of calcium and nitrogen was as good in

1. Wang, Chi Che; Frank, Margaret; Hays, Bertha B.; Kern, Ruth; Kaucher, Mildred; and Hawks, Jean E.: Metabolism of Undernourished Children, Am. J. Dis. Child. **32**: 63 (July) 1926; II. Basal Metabolism, ibid. **32**: 350 (Sept.) 1926; III. Urinary Nitrogen with Special Reference to Creatinine, ibid. **32**: 360 (Sept.) 1926; IV. Calcium Metabolism, ibid. **35**: 856 (May) 1928; V. Protein Metabolism, ibid. **35**: 968 (July) 1928; VI. Caloric Balance, ibid. **36**: 979 (Nov.) 1928; VII. Effect of High and Low Protein Diets on the Nitrogen and Caloric Balance of Undernourished Children, ibid. **36**: 1161 (Dec.) 1929; VIII. The Effect of High and Low Protein Diets on the Excretion of Creatine, Creatinine and Ammonia, ibid. **38**: 468 (Sept.) 1929; IX. A Study of the Basal Metabolism, Caloric Balance and Protein Metabolism During a Period of Gain in Weight, ibid. **38**: 476 (Sept.) 1929.

underweight as in normal children. The retention of calcium was slightly higher and that of nitrogen markedly higher in the underweight children than in the normal controls. Underweight children appeared to have a better utilization of nitrogen than did the normal ones, in that the former did not have a negative nitrogen balance as readily on a low protein intake as did the normal children. The undernourished children made a much better and more rapid gain in weight on a high than on a low protein intake. Creatinine excretion, when calculated according to body weight, was normal and varied directly with the body weight. All the children excreted creatine, the amount varying with the protein intake.

The results of this prolonged investigation of the metabolism of undernourished children, which was based on a study of eighty-three children, whose periods of stay in the hospital ranged from three to twenty-eight weeks, appear to have been largely negative in that they brought to light no striking or essential abnormality of metabolism in the undernourished child, if the latter is free from physical defects. In the establishing of this point lies the chief value of the work. Positive observations of practical value are that the underweight child can be made to gain in weight if sufficient attention is paid to its diet and food habits, and that the growing child requires a high protein intake.

A "BITE" BETWEEN MEALS

In a government report [1] on recent economic changes in the United States, a committee under the chairmanship of Herbert Hoover while he was secretary of commerce noted that as a people we have become steadily less concerned about the primary needs—food, clothing and shelter. We have long since lost all fear concerning our food supply, the report continues, and so we no longer look on food as a luxury or as a primary source of pleasure. The slogan of "the full dinner pail" is obsolete. During the World War the thesis that "food will win the war" was stressed everywhere, so that food fuel, measured most conveniently in terms of calories, gained a respectful consideration in every household where the conception of energy as a source of human activity could be adequately appreciated. Meanwhile progress in the study of the science of nutrition introduced new conceptions into our knowledge. The story of the vitamins, dietary essentials that cannot be evaluated in terms of calories, was developed. It contained chapters that are dramatic in interest and almost miraculous in their implications. The action of these accessory food factors has proved to be something far more important than an evanescent hypothesis in nutrition. Similarly the rôle of inorganic nutrients has acquired greater importance in the eyes of dietitians, so that calcium, phosphorus, iron, iodine and other elements involved in mineral metabolism are no longer largely overlooked, as they were a generation ago, in the practical consideration of the diet. One need merely read the food advertisements of the present day to learn how prominent the features other than food fuel have become in modern sales promotion. Nor is this primarily quackery; it is rather the reflection of current education in nutrition.

Perhaps this is a proper time at which to attempt to restore the consideration of calories to its normal place and to endeavor to secure a better perspective with regard to the essentials of a healthful regimen. Recently the statement was made [2] that the present-day tendency in matters of diet is to stress the vitamins and minerals, and yet our main need for food is to secure energy, as energy is just as necessary to run the human machine as it is to run any prime motor. Two features of the energy aspect have received special stress. One of them is the formerly unanticipated magnitude of the food requirement during adolescence. It has been pointed out [3] that the food of growing children and of youths is relatively more expensive than that for adults, because of their higher expenditure of energy in proportion to size and the greater need for building materials and vitamins, which are more costly than simple foods. This writer [3] insists that, if rigid economy must be practiced, let it be as far as possible on the seasoned adult, who can best bear it, and not on developing young persons, whose right is not only to be well born but also well reared.

A second feature in relation to the energy factor in nutrition deals with what has been termed "girth control." The momentary dictum of the style that calls for the "sylph-like figure" has brought calory intake prominently into the ken of those who pursue it. In either case, whether in the search for adequate food for growth or in the determined effort to avoid increment in weight, the necessity of counting the calories obtrudes itself into the situation. It is no longer merely a question of meal-time habits. Americans are confronted with the opportunity of "in between" lunching in numerous places. The sandwich shop, the tea room, the candy counter, the soda fountain, the ice cream parlor and other purveyors of food outside the routine of the usual meals beckon to the debating potential customer. After all, what differences do the slight dietary digressions referred to involve? Are they really to be reckoned with seriously in terms of food fuel?

A quart of milk at 12 cents affords 33 Gm. of protein and nearly 700 calories. This may be taken as an item for comparison. In a recent survey [2] at inland

1. Recent Economic Changes in the United States, Elimination of Waste Series, U. S. Dept. of Commerce, Washington, D. C., 1929.

2. Benedict, F. G., and Farr, A. G.: The Energy and the Protein Content of Food Regularly Eaten in a College Community, Bull. 242, New Hampshire Agric. Expt. Sta., May, 1929.

3. Rose, Mary S.: Feeding the Family, ed. 3, New York, Macmillan Company, 1929.

communities which may be regarded as representative of "average" American centers it was found that the conventional sandwich costing 10 cents yielded nearly 200 calories. Servings of ice cream at 15 cents averaged about 200 Gm. in weight, 500 calories of total energy and 7 Gm. of protein. The energy value per 10 cents of sundaes from drug stores was about 250 calories, or nearly 100 calories less than in the ice cream. One pint of chocolate milk shake (not greatly unlike the widely advertised concoctions recommended to produce "drugless sleep") furnished from 450 to 500 calories and from 14 to 15 Gm. of protein. The unending variety of so-called inexpensive candy bars that are sold by the millions of packages at news and cigar stands afford, on the average, 450 calories per 10 cents. The list might readily be expanded, but the essential conclusion is that the occasional "nibble" or "bite" in which the American people indulge between meals is by no means devoid of energy, particularly when reckoned as an addendum to the conventional 2,700 to 3,000 calories supplied daily by the routine three meals. This is not a sermon, it is an exposition of nutritive truth.

Incidentally, the New Hampshire studies [2] that have supplied these facts of analysis further indicate that the energy value of the total food consumed daily, weekly or for any period of time may be estimated, in terms of its fuel value, with a relatively high degree of accuracy by obtaining the air-dry weight of a food mixture and multiplying it by the factor 5. This relatively simple procedure does away with the necessity for the use of complicated apparatus; it gives the physician and the dietitian a ready means of calculating the energy intake with a degree of accuracy sufficient for most purposes.

WARNING PROPERTIES OF CERTAIN INFLAMMABLE HYDROCARBON GASES

Twenty-five years ago, city conveniences were the envy of the rural inhabitants. Today there is little cause for envy. To the farmer and villagers have come the telephone, the electric current, the radio, the central heating plant (furnace) and, quite frequently, the modern bathroom. One great convenience not generally obtainable is gas for fuel in the kitchen. Recently, cylinders containing certain hydrocarbons under high pressure have been made available, and these may be utilized just as is city gas for heating purposes. These gaseous products have generally been rectified from natural gas and consist of such highly volatile hydrocarbons as propane, butane, pentane, hexane and heptane. The applications for the use of the gases have increased enormously in a relatively short period. One of the gases or a mixture of a number may be employed for cutting glass, for particularized industrial uses, and as a refrigerant. This increased usage, much of which is ultimately in the home, makes more possible the occurrence of inflammable atmospheres arising from accidental leakage. Unlike methyl chloride, which has been the subject of recent investigation, these hydrocarbon gases do not have marked toxic properties; nevertheless, explosive mixtures may develop.

Health and safety against hazards from contamination of the atmosphere in confined spaces depend to a considerable extent on whether or not the contaminating agent possesses sense perspective properties of an appreciable nature. If distinct and easily recognized warning is given, hazards are lessened; if warning properties are inadequate, the hazards are augmented.

The Bureau of Mines was requested by one manufacturer to investigate the warning properties of the highly volatile hydrocarbons in liquefied natural gas products; the problem was to ascertain whether leaks or escape of vapors could be detected in advance of dangerous concentrations. The report of Patty and Yant [1] of the Bureau of Mines, now available, answers many questions. The odor intensity and physiologic response produced by vapors of both the commercial and the purified gases in air were studied by exposing persons to concentrations of vapors ranging from zero, through the minimum detectable amount, to concentrations which produced a strong odor, if the last was attainable with the particular product. Tests were made by both the continuous exposure method and the intermittent exposure method.

The odor and physiologic response were found to increase with the increasing number of carbon atoms in the substance (C_3H_8; C_4H_{10}; C_5H_{12}; C_6H_{14}; and C_7H_{16}). The odors of heptane and hexane were easily noticeable in concentrations below their lower inflammable limits. Likewise, heptane and hexane vapors produced distinct symptoms, principally vertigo, after a few minutes' exposure to concentrations below their lower inflammable limits. The odor of pentane was indistinct and that of butane and propane was practically absent in lower inflammable limit mixtures. Also distinct warning symptoms were not produced after several minutes' exposure to hazardous vapor-air mixtures of pentane, butane and propane. The investigators point out that persons whose duties entail frequent exposure to the substance in question may become more tolerant than those used as subjects for the tests, thereby requiring higher concentrations or longer exposure, or both, to cause distinct symptoms.

In the absence of properties which will give warning in event of escape of the vapors, Patty and Yant recommend that a warning agent should be added to propane, butane and similar products contained under

1. Patty, F. A., and Yant, W. P.: Odor Intensity and Symptoms Produced by Commercial Propane, Butane, Pentane, Hexane and Heptane Vapor; Reports of Investigations, number 2979, U. S. Bureau of Mines, December, 1929.

pressure which are dispensed for general use as a fuel gas in confined spaces, especially in homes. It is well that the industry has had the foresight to suggest such investigations before the welfare of the public has been jeopardized, as was the case with regard to methyl chloride refrigerants. The processes for adding warning agents, and their usefulness are not, however, a settled matter. In the case of the liquefied natural gases, the problem appears easier than in the case of methyl chloride.

Current Comment

EARLY ABORTION AND STERILITY

With the exception of those cases of sterility which are due to the absence of mature gametes, sterility and early abortion may fairly be assumed to result from the same disorders. Both may be due to inherent defects in the gametes themselves, to incompatibility between them, or to an unfavorable environment surrounding the fertilized ovum. The inherited and the environmental factors each received emphasis at the recent discussion of this subject before the Royal Society of Medicine in London.[1] Prof. Arthur Robinson was the champion of the former point of view. He brought to its support the results of painstaking research on the fate of 1,643 ova shed from the ovaries of 165 ferrets. More than 30 per cent of these failed to produce living offspring. By making serial sections of the oviducts and the uteri, in the early stages, and sections of zygotes and of embryos in the later stages, it was possible to determine what had happened to the majority of the shed ova that had failed. Some of the shed ova had not been fertilized although plenty of spermatozoa were present. Robinson assumes that in these cases ova and spermatozoa were for some reason incompatible. Although most of the ova had been fertilized, about 40 per cent of the zygotes had failed to give rise to living young. Since multiple young are produced in these animals and since the dead zygotes are found in the same uteri with living embryos that normally will proceed to term, Robinson argues that the constitution of the dead zygote must be at fault, because its environment is not different from that of the living embryos. Professor Whitehouse considers the site of implantation of the zygote and the conditions of its subsequent nutrition to be more important factors. Implantation in the decidua of the lower uterine segment is, he believes, usually followed by death. The decidua of the upper uterine segment depends on the integrity and normal function of the corpus luteum. Diseases of this gland or malnutrition due to abnormal positions of the uterus lead to abortion. Lesions are not confined to the embryo in many of these aborted ova: the chorion as well is usually diseased. Every form of abnormal ova and monster can be produced from normal ovaries and spermatozoa by artificial interference with the environment. Moreover, when implantation occurs in so abnormal a site as the tube, 96 per cent of the embryos are abnormal. The question arises as to whether a threatened abortion should receive conservative treatment since the possibility of the subsequent birth of a monster must be borne in mind. Professor Whitehouse recalled two cases in which abortion was staved off successfully only to result in the birth of children with anencephalus and spina bifida, respectively. In support of the view that nutrition of the embryo may play an important part in its survival, he quoted case histories of women who after several unsuccessful pregnancies had given birth to full term babies when due attention had been paid to their nutritional requirements during pregnancy. Both these views deserve consideration. Perhaps from the clinical point of view it is less important to determine the relative frequency of inherited or environmental defects than it is to bear in mind that either may be the cause of trouble.

1. Discussion of the Causes of Early Abortion and Sterility, Proc. Roy. Soc. Med. (Section of Obst. & Gynec. and Section of Comparative Med.) **33**: 1 (Dec.) 1929.

PREVENTABLE BLINDNESS

The prevention of blindness depends on an intelligent appreciation of its various causes and of their relative importance. Unfortunately, reliable statistics as to the amount and the causation of blindness are hard to obtain. On this account the painstaking research of the commission for the blind in Colorado is of permanent value. True, the results do not include records of all the blind in the state, for not all the blind apply for relief; but all the blind that have come to the attention of the commission have been carefully studied, for the most part by specialists, and the causes of blindness accurately determined. To the 1,053 cases in the official records have been added 150 cases from the private records of Dr. Edward Jackson,[1] who now reports the investigation. The commonest cause of blindness was found to be cataract (460 cases), in most cases of the senile type. Opacity of the cornea accounted for 157 cases, of which forty-nine were the result of trachoma. Ophthalmoscopic examination revealed lesions of the retina and choroid in 151 cases. Syphilis was shown to be the cause of atrophy of the optic nerve in twenty-two cases and was probably the cause of many more of the remaining 110 cases of atrophy. There were ninety-seven cases of glaucoma, causing blindness though not yet advanced to the stage of optic atrophy. High myopia was certainly the cause of forty-three cases and probably of others. Injury was directly responsible for loss of sight in sixty-six cases. Dr. Jackson believes that sight might have been preserved in the majority of these cases had adequate treatment been provided in time. Physicians are called on to make early diagnosis of disease that may lead to blindness even though, at the time, the eyes themselves are little if at all affected. They should also remember that some diseases that do not usually lead to blindness may occasionally do so. The ophthalmologist, for his part, must be prepared to decide promptly on surgical intervention when by this means alone he may save the patient's sight.

1. Jackson, Edward: Causes and Prevention of Blindness in Colorado, Am. J. Ophth. **12**: 965 (Dec.) 1929.

Association News

MEDICAL BROADCAST FOR THE WEEK

Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association, through its Bureau of Health and Public Instruction, broadcasts daily at 10 o'clock, Central Standard Time, with the exception of Friday, when the health message is delivered at 9:45, over Station WBBM (770 kilocyles, or 389.4 meters).

The program for the week of February 17-22 is as follows:

February 17. Scientific Nutrition and Public Health.
February 18. The Danger of Measles.
February 19. Some Medical Frauds.
February 20. Scientific Nutrition and Public Health.
February 21. Scientific Nutrition and Public Health.

Evening Health Hints from Hygeia, 8 o'Clock, Central Standard Time

February 17. Psychological Tests for Infants.
February 18. Are You Afraid of a Hospital?
February 19. Who Is Your Doctor?
February 20. Your Rat.
February 21. Pay Yourself 200 per Cent.
February 22. A Bath Tub's Complaint.

Health Talks During Noon Hour

The American Medical Association broadcasts daily at 12:20 to 12:25 p. m. over the following stations of the Columbia Broadcasting System: WBBM, Chicago; WFBM, Indianapolis; WCCO, Minneapolis; KOIL, Council Bluffs; KMOX, St. Louis; WIBW, Topeka; KFH, Wichita; WMT, Waterloo, Iowa.

The subjects which will be presented for the week of February 17-22 are as follows:

February 17. What Your Stomach Does for You.
February 18. When the Doctor Orders Eggs, Green Vegetables and Cereals.
February 19. What Happens When Your Arteries Grow Old.
February 20. On Fooling the Doctor.
February 21. Eye Exercises in Place of Glasses.

THE DETROIT SESSION

Time Limit for Application for Section Exhibits

As has been announced previously, there will be four section exhibits in the Scientific Exhibit: namely, the exhibits under the auspices of the Section on Dermatology and Syphilology, the Section on Radiology, the Section on Urology and the Section on Diseases of Children. Applications of participants in any of the section exhibits must be in the hands of the committee chairman by March 1. For the Section on Dermatology and Syphilology, address Dr. Fred D. Weidman, Thirty-Sixth Street and Hamilton Walk, Philadelphia, Pa.; for the Section on Radiology, Dr. P. M. Hickey, University Hospital, Ann Arbor, Mich.; for the Section on Urology, Dr. George Gilbert Smith, 6 Commonwealth Avenue, Boston, Mass.; for the Section on Diseases of Children, Dr. F. Thomas Mitchell, 376 South Bellevue, Memphis, Tenn.

Medicine at Its Best.—A physician may possess the science of Harvey and the art of Sydenham, and yet there may be lacking in him those finer qualities of heart and head which count for so much in life. Posture is not everything, and that indefinable though well understood something which we know as breeding is not always an accompaniment of great professional skill. Medicine is seen at its best in men whose faculties have had the highest and most harmonious culture. The Lathams, the Watsons, the Pagets, the Jenners and the Gairdners have influenced the profession less by their special work than by exemplifying those graces of life and refinements of heart which make up character.—Cushing, Harvey: Sir William Osler, vol. 1, p. 459.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Trichinosis Unduly Prevalent.—During the four weeks ended January 11, seventy-two cases of trichinosis were reported to the state department of public health. In the past year nearly all cases of trichinosis that have occurred in California have been traced to the consumption of raw, homemade sausage over which the authorities have no control.

Personal.—The dean of the University of Southern California School of Medicine, Los Angeles, announces the appointment of Dr. Verne R. Mason as clinical professor of medicine, and of Dr. Robert W. Lamson as associate professor of bacteriology and immunology.——Governor Young announced, January 10, the appointment of Drs. Harry V. Brown, Glendale, Henry A. L. Ryfkogel, San Francisco, and George Dock, Pasadena, as members of the California State Board of Medical Examiners to succeed Drs. Herbert M. Robertson, Santa Ana; Andrew W. Morton, San Francisco, and Wilburn H. Smith, Los Angeles, respectively.

Society News.—Dr. Joseph B. De Lee, Chicago, presented a film on "Technic of Breech Presentation" before the staff of the San Diego County Hospital, January 28, and Dr. Allen B. Kanavel, a film on "Infections of the Hand."——"The Chemist's Concept of Cancer" was the subject of an address by Robert A. Armstrong before the Pacific Physiotherapy Association, January 22, at Los Angeles.——Drs. Harry E. Alderson and Stuart C. Way presented a motion picture demonstration of dermatologic cases before the San Francisco County Medical Society, February 11, and Dr. Louis I. Breitstein a motion picture on breech delivery and the application of forceps to the after-coming head. The section on surgery of the society will hold a symposium, February 18, to be conducted by Drs. George K. Rhodes, Arthur Carol McKenney, Jr., Ernest H. Falconer and Richard W. Harvey.——The Northern California Public Health Association met at Stanford University, January 11. The scientific program included a talk by Karl F. Meyer, Ph.D., on "Observations in Europe on Diagnosis and Treatment of Communicable Diseases." Dr. Adelaide Brown, San Francisco, was elected president.——The Los Angeles County Medical Association was addressed, February 6, by Dr. Karl Fischel on "Nonapical Infiltration in Pulmonary Tuberculosis," illustrated; Dr. Mary Florence Bigler, "Spinal Anesthesia," and Dr. E. M. Hall, "Subacute Cirrhosis of the Liver" with lantern slides. The motion picture, "Absorbable Sutures," was also presented.——Dr. Thomas O. Burger, San Diego, addressed the Los Angeles Surgical Society, February 14, on "Varicose Veins and Their Treatment," with a motion picture demonstration.

ILLINOIS

Illegal Practitioner Fined.—It is reported that H. H. Riggs of Peoria was fined $500 and costs, January 25, at Cambridge, by County Judge Davis, following his plea of guilty to a charge of practicing medicine without a state license.

Assistant Director of State Health Department Resigns.—Dr. Thomas H. Leonard, Springfield, who since February, 1921, has been assistant director of the state department of public health, has resigned to accept a position in California. Dr. Albert C. Baxter is the new appointee.

Personal.—Dr. Henry W. Sandeen was appointed city health officer of Woodstock, January 17, succeeding Dr. Clyde F. Baccus, resigned.——Dr. Victor H. De Somoskeoy, La Plata, Md., has assumed his duties as public health officer of Jacksonville, it is reported.——Dr. Major Worthington, Geneva, has assumed his duties as managing officer of the Research and Educational Hospital, Chicago, succeeding Louis F. Wilk.——Dr. Clarence H. Boswell was elected president of the staff of the Rockford Hospital, January 21.

Society News.—The Will-Grundy County Medical Society was addressed, January 29, Joliet, by Dr. G. Henry Mundt, Chicago, on "Social Aspects of the Practice of Medicine."——Dr. Ralph A. Kinsella addressed the St. Clair County Medical Society, East St. Louis, February 6, on "Recent Studies of Rheumatism."——Dr. Walter M. Boothby, Rochester, Minn., addressed the Peoria City Medical Society, January 21, on

"Oxygen Therapy" and "Thyroid."——The Adams County Medical Society held a symposium on obstetrics, February 10, at Quincy. The speakers were Drs. Aldo K. Germann, Clarence A. Wells, Milton E. Bitter, Ralph McReynolds and Harold Swanberg.——Dr. Charles A. Elliott, Chicago, was the guest of honor at a dinner given by the Vermilion County Medical Society at the Hotel Wolford, Danville, February 4. A scientific program followed the dinner, at which Dr. Elliott gave an address on "Observations Concerning the Treatment of Diseases of the Liver." While the physicians were holding their meeting the Woman's Auxiliary to the Vermilion County Medical Society, with representatives from various local women's organizations, had a dinner, following which an illustrated talk, "Pink Pills for Pale People," was given by Dr. Arthur J. Cramp, director, Bureau of Investigation, American Medical Association.

Chicago

Safrine Sentenced.—It is reported that A. J. Safrine, who formerly for years was a male nurse at Michael Reese Hospital, and who also was listed in the Chicago telephone book as an M.D., was sentenced, January 28, by Judge Heap to three months in the county jail and fined $300 for practicing medicine without a license. There is no record in these headquarters of Safrine ever having graduated from a medical school.

Society News.—The Chicago Society of Industrial Medicine and Surgery was addressed by Dr. Melvin S. Henderson, Mayo Clinic, Rochester, Minn., February 5, on "Ununited Fractures: Etiology and Treatment"; Drs. George L. Apfelbach, Robert W. Keeton and Raymond W. McNealy discussed diabetes.——The Chicago Laryngological Society was addressed, February 3, by Josef Fischer, Vienna, Austria, on "Pathogenesis of Cholesteatoma," illustrated.——The Chicago Pathological Society was addressed, February 10, among others by Dr. William Bloom on "Structure of the Lung and Its Implication in Inflammation"; Paul H. Harmon, "Pathologic and Symptomatic Observations on Animals Inoculated with the Virus of Poliomyelitis," and Dr. R. H. Jaffe, "Tubercle-Like Structures in Human Goiters."——The Chicago Gynecological Society will be addressed at the Murphy Memorial Hospital, February 21, by Drs. William C. Danforth and Robert M. Grier on "An Analysis of One Hundred and Twenty Low Cervical Cesarean Sections," and Dr. Frederick H. Falls, "Observations on the Use of Local Anesthesia in Gynecologic Operations."——Dr. George Gellhorn, professor of obstetrics and gynecology, St. Louis University School of Medicine, will give the annual Bacon lectures in the library of the University of Illinois College of Medicine. The first lecture will be given, March 6, on "The Use of Local Anesthesia in Gynecology"; the second, March 7, on "Syphilis of the Uterus." Physicians are cordially invited to attend.——A medical chapter of the Reserve Officers' Association, sixth corps area, was organized at a meeting, February 3.——The sixth Lewis Linn McArthur Lecture of the Billings Foundation will be given before the Institute of Medicine of Chicago, February 28, at the City Club, by Dr. Alexis Carrel of the Rockefeller Institute for Medical Research, New York, on "The Process of Wound Healing"; members of the Chicago Surgical Society will be guests of the institute at this meeting. A joint meeting of the Institute of Medicine and the Society of Medical History of Chicago will be addressed, March 28, by Dr. Francis R. Packard, Philadelphia, on "William and John Hunter, a Study in Contrasts," illustrated.

KENTUCKY

Bills Introduced.—S. 155 and H. 225 propose to allow a county whose county seat is a city of the fifth or sixth class to enter into a contract for the treatment of indigent sick with an adjacent county having a community hospital. S. 161 and H. 204 propose to require the licensing of all embalmers and to require a high school education and a course of study of not less than twenty-six weeks in the art of embalming of such applicant. S. 215 and H. 326 propose to authorize cities of the first class to construct public hospitals. S. 177 and H. 273 propose to repeal the law requiring vaccination of pupils in public and private schools. H. 274 seeks to amend the workmen's compensation law by proposing, among other things, (1) to extend to 120 days the time for which the employer shall be liable for medical, surgical and hospital services rendered an injured employer; (2) to provide that the compensation board may in its discretion allow medical and hospital services in an amount not to exceed $200 more than is now allowed by law. H. 317 proposes to provide that no woman under 21 years of age, except nurses, shall be employed more than fifty-one hours a week or more than eight and one-half hours in any day.

LOUISIANA

Society News.—Mr. William A. Porteous, Jr., addressed the Orleans Parish Medical Society, recently, on "The Doctor in Court."——The Jackson Lincoln Bi-Parish Medical Society at a joint meeting with the medical profession of Jonesboro was addressed, January 14, by Drs. Owen C. Rigby, Shreveport, on "Meningococcal Meningitis," and Thomas P. Lloyd, Shreveport, "Abdominal Pain."——The Shreveport Medical Society was addressed at the Charity Hospital, January 7, among others, by Dr. Michael S. Picard on "The Crying Infant."

MASSACHUSETTS

Bill Introduced.—H. 994 proposes to amend the workmen's compensation act by providing that the employee shall be allowed a reasonable sum for care and nursing, whether or not such services are rendered in a hospital or at his home by members of his family.

New Bedford Free from Typhoid Deaths.—The report of the board of health shows, it is said, that New Bedford for the second time in eight years has the distinction of a clean slate so far as deaths from typhoid are concerned. Only four cases were found in 1929. In 1922 there were eighteen cases and no deaths.

Boston Makes Infant Mortality Record.—The Health Department of Boston reports that the infant mortality (68.03) for 1929 was the lowest ever recorded for that city. There was a decrease in the number of deaths from diarrhea and enteritis in children under 2 years of age, 135 deaths occurring as compared with 209 for 1928. A decrease was also noted in the number of deaths of mothers due to puerperal diseases, 112 being reported. The total number of clinic stations for the examination of suspected tuberculosis is twelve, two having been added during 1929. About 28,000 children were given dental care at the clinics during the year, an increase of 5,000 over the previous year. About 15,000 examinations were made of samples of milk taken from wagons and stores, and more than 3,200 applications for dealers in ice cream were approved by the milk inspection division. Among other things accomplished by the sanitary division was a survey of hospitals to determine conditions with regard to the use and storage of roentgen-ray films.

Society News.—Dr. George R. Minot, professor of medicine, Harvard University Medical School, Boston, addressed the South End Neighborhood Medical Club, Boston, January 21, on "Treatment of Anemia."——Dr. Edward M. Hodgkins, Boston, addressed the Fall River Medical Society, February 12, on "Use of Fascial Sutures in the Cure of Recurrent Inguinal Hernia."——Dr. Louis E. Phaneuf, Boston, addressed the section of obstetrics of the Buffalo Academy of Medicine, January 22, on "Repair of Complete Perineal Lacerations."——The Hampden District Medical Society was addressed, January 28, at Springfield by Drs. Howard F. Root and Walter Stanley Curtis, Boston, on "Management of the Diabetic."——Among others, Dr. Abraham Myerson addressed the Massachusetts Psychiatric Society, February 7, on "Basic Considerations of the Physiologic Approach to Psychiatry," and Dr. Ray D. Halloran, Boston, "Biochemical Studies of Brain Activity by the Jugular Puncture Method."——In a symposium at the Boston Medical Library, January 29, talks were given by Drs. Stephen Rushmore on "Public Health Nursing" and Joseph B. Howland on "The Hospital as a Means of Educating the Nurse."——Dr. William H. Welch, Baltimore, addressed the district medical societies of Suffolk, Norfolk and Middlesex South at Boston, February 5, on "Medical Libraries and the Profession."——Dr. John M. Birnie, Springfield, addressed the Franklin District Medical Society, January 14, on "Acute Abdominal Conditions."

MICHIGAN

Personal.—The board of regents of the University of Michigan has relieved Dr. Hugh Cabot of his duties as dean of the medical school; he will continue as professor of surgery. A committee of five will be appointed by President Ruthven to administer the affairs of the school temporarily.——Dr. Walter C. Reineking will leave Ironwood, May 1, where he is superintendent of the Grand View Hospital, to assume charge of the new Dane County Tuberculosis Sanatorium, Madison, Wis.

Society News.—Motion pictures on normal breech presentation, and "Surgical Treatment of Peptic Ulcers," were presented before the Dickinson-Iron County Medical Society, January 29, at Iron Mountain.——Dr. Palmer E. Sutton, Royal Oak, addressed the Oakland County Medical Society at Pontiac, January 16, on "A Plan for Rendering Adequate Medical Service to the Indigent."——Dr. Joseph Liburt addressed the

Wayne County Medical Society, Detroit, February 14, on "Hemorrhoids." The society was addressed, February 11, by Dr. Edward Speidel, Louisville, Ky., on "Treatment in the Home of Vomiting of Pregnancy."

MISSOURI

Sentenced for Narcotic Violation.—Dr. Asa E. Fields, Kansas City, has been sentenced to the federal prison at Leavenworth by Federal Judge Otis for having violated the Harrison Narcotic Act. Because of age, Dr. Fields was given the minimum sentence of eighteen months.

Personal.—Dr. Herman S. Gove, Linn, was elected president of the State Board of Health of Missouri, January 10, succeeding Dr. Homer L. Kerr, Crane; Dr. Francis M. McCallum, Kansas City, was elected vice president, and Dr. James Stewart, Jefferson City, secretary, reelected.

Exchange of House Physicians. — Dr. Findlay J. Ford, Glasgow, Scotland, has arrived in St. Louis and assumed the position of assistant physician at Barnes Hospital, and Dr. Justin J. Cordonnier of that hospital has gone to London to do research in the East London Hospital for Children. This is the second year in which the exchange of house physicians between these institutions has been in operation.

St. Louis Employs an Executive Secretary.—Mr. Elmer H. Bartelsmeyer has been appointed executive secretary of the St. Louis Medical Society. For more than eight years Mr. Bartelsmeyer was secretary to the St. Louis Board of Police Commissioners; he is a graduate in law and was admitted to the bar in 1915. This is the first time that the executive secretary plan has been used by the St. Louis Medical Society.

Society News.—The Kansas City Southwest Clinical Society was addressed, February 11, by Drs. James E. Stowers on "Management of Infections of the Hand"; Harvey B. Matthews, Brooklyn, N. Y., "Diagnosis and Treatment of Pelvic Inflammations in the Female"; Frederick B. Campbell, "Office Treatment of Rectal Diseases"; Fred B. Kyger, "Occiput Posterior Position"; Ira H. Lockwood, "Treatment of Carcinoma of the Cervix," and Claude J. Hunt, "Diagnosis, Symptoms and Preoperative Treatment of Thyrotoxicosis."

Five Year Study of Trachoma. — Provision has been made for a five year research into the cause and cure of trachoma by a gift from the Commonwealth Fund, New York, to Washington University, St. Louis. The gift will consist of a donation of $50,000 annually for a period of five years and longer if the need exists at the expiration of that period. Dr. Harvey J. Howard, professor of ophthalmology, Washington University School of Medicine, St. Louis, will be director of the research. The work will be conducted in the Oscar Johnson Institute which, with the McMillan Hospital, is now being erected by Washington University and should be ready for occupancy the latter part of this year.

NEW JERSEY

Bills Introduced.—S. 127 proposes to amend the workmen's compensation act, relative to traumatic hernia. S. 83 proposes to provide that corrections in death certificates shall be signed by the physician, coroner, undertaker or informer whose name appears on the certificate, and that undertakers shall not have authority to correct or amend causes or duration of causes of death. H. 85 proposes to provide that after Jan. 1, 1934, an applicant for a license to practice chiropody, in addition to being a graduate of a reputable college of chiropody, must have served an internship for one full school year in a duly licensed clinic connected or affiliated with the college of chiropody. H. 86 proposes to add a chiropodist or podiatrist to the state board of medical examiners. H. 92 proposes to create a state board of barbers and to regulate the occupation of barbering.

NEW YORK

Society News.—The medical societies of Kings and Queens counties will hold a joint meeting with the second district branch of the Dental Society of the State of New York in the building of the Medical Society of the County of Kings, March 10. At the afternoon session the topics for discussion will be "Cooperation of the Physician and Dentist in the Recognition of Disease" and "What Justifies the Dentist and the Physician in Advising the Extraction of a Tooth?" The subject for the evening session will be "Oral Conditions and General Health."——The Broome County Medical Society was addressed, January 7, among others by Dr. John A. Lichty, medical director and superintendent, Clifton Springs Sanitarium and Clinic, on "The Colon and Its Relation to Associated Diseases."

Bills Introduced.—S. 533 and H. 722 propose to create a temporary state commission to study maternity aid. S. 553 proposes to create in the education department a division of medicinal liquor to carry out the provisions of the proposed law relating to the prescribing, sale and use of intoxicating liquors for medicinal purposes. S. 587 proposes to provide that an optometrist may not use the title "doctor" in connection with his practice without the word "optometrist" following his name in lettering of exactly the same size and character as is used for such title. S. 431 proposes to provide for the sexual sterilization of insane, idiotic, imbecile, epileptic and feebleminded inmates of public institutions. H. 497 proposes to amend the workmen's compensation act by allowing compensation for any and all disabling diseases and disabling illnesses contracted in any and all employments within the act. H. 600 proposes to amend the workmen's compensation act by providing that if, after a request for medical services made by the injured employee the employer fails to provide them, the injured employee may do so at the expense of the employer.

New York City

Fifth Harvey Lecture. — Philip E. Smith, professor of anatomy, Columbia University College of Physicians and Surgeons, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, February 20, on "Relations of the Activity of the Pituitary and Thyroid Glands."

Dust in New York's Air.—The New York Meteorological Observatory, Central Park, found that every million cubic yards of New York's atmosphere contained, during January, an average of 1.35 pounds of impurities. The pollution of the air, measured by an automatic air filter, showed the city's air to be cleanest at 4 a. m. and most polluted at 9 a. m. The pollution of the air varied during the month from 0.27 pounds of impurities per million cubic yards, on January 11, to 2.70 pounds on January 27.

Society News.—The New York Electrotherapeutic Society was addressed, February 5, by Dr. Stella S. Bradford on "Development and Corrective Exercise as Taught by Niels Bukh of Denmark"; Dr. Henry H. Kessler, Newark, N. J., "Rehabilitation of the Physically Handicapped," and Dr. Royal S. Haynes, "Importance of Position in Medical Problems."—— Dr. James N. West was elected president of the Physicians' Mutual Aid Association at its annual meeting at the New York Academy of Medicine, January 28, and Dr. Alfred C. Prentice was made secretary.

Industrial Medical Work Condemned.—The state industrial commissioner, it is reported, has received from the industrial council a report severely condemning some of the medical agencies or clinics to which the larger industrial concerns send their injured workmen in New York City. Aside from the suitability of the quarters occupied, an apparent disregard of ordinary standards of cleanliness was found. In one instance, a roentgen-ray apparatus was found without any protective screen. In several clinics the number of physicians was found to be wholly unequal to the demands made on them. The report urged immediate legislation restricting the treatment of injured workers to licensed physicians and nurses.

Measles in the Even Numbered Years.—Physicians are to be advised as to the method of drawing adult blood from parents and injecting it into children exposed to measles, in view of the increase in measles. For years, measles in the city has been unduly prevalent every second year, the cases in the even numbered years rising to between 30,000 and 40,000, while in the odd numbered years they ranged between 2,000 and 9,000. Last year there were only 2,537 cases of measles, so that this year a large number of cases is expected. The efficiency of the whole blood injection treatment has stood up under rigorous tests in a study covering ten years. The use of adult blood makes it easy for the physician for the reason that it can be obtained right in the home of the patient.

Personal.—One of the two fellowships in orthopedic research, recently established by Frederick Brown at the Hospital for Joint Diseases, has been awarded to Dr. David H. Kling for 1930, who will begin research at the hospital on fluids of the joints of the body.——Dr. Howard Fox has recently returned from Mexico, where he made a study of the tropical skin disease mal del pinto.——Dr. Margaret S. Witter is the first woman to be appointed an official medical examiner of licensed pilots, it is reported.——Dr. Shirley W. Wynne, city health commissioner, has been appointed professor of preventive medicine at New York Polyclinic Medical School and Hospital, and Drs. Gaylord W. Graves and Alexander T. Martin, professors of pediatrics.——Dr. Henry Reiter has been appointed deputy medical superintendent of Harlem Hospital.

NORTH CAROLINA

Personal. — Dr. Elmer A. Pierce, Apex, has located on Ocracoke, an island which for more than a year has been without a physician. Dr. Pierce has been appointed acting assistant surgeon, U. S. Public Health Service, for which he will receive a regular salary from the government for looking after the health of the men in the coast guard stations at Ocracoke, Portsmouth and Hatteras Inlet, and in the lighthouses at Ocracoke, Brant Island, Bluff Shoal and Neuse River. —— Dr. Robert E. Fox, Asheville, has assumed the duties of health officer for Buncombe.——Dr. Roy H. Long, Morganton, has been appointed neuropsychiatrist to the U. S. Veterans' Bureau Hospital at Augusta, Ga.

OHIO

Society News.—The Greene County Medical Society was addressed at Xenia, January 2, on "Diseases of the Biliary Tract" by Dr. Robert C. Austin, Dayton.——Dr. Hubert C. King, Lakewood, addressed the Lorain County Medical Society, January 14, at Lorain, on "Periodic Health Examination."—— The Ashtabula County Medical Society was addressed at Ashtabula, January 6, by Dr. James L. Reycraft, Cleveland, on "Eclampsia."——The Trumbull County Medical Society was addressed at Warren, January 16, by Dr. Willard C. Stoner, Cleveland, on "The Psychic Factor in Diagnosis and Treatment of Disease as Concerns the General Practitioner," and by Dr. John J. Thomas, Cleveland, on "To Whom Does the Priority Belong for the Discoveries of the Etiology of Puerperal Fever?"——Dr. Eugene B. Dyson, Akron, addressed the Portage County Medical Society, January 2, at Ravenna, on "Relation of the Human Constitution to Disease," and Dr. Charles E. Held, Akron, "Coronary Thrombosis."——The Union Medical Association was addressed at Canton, January 8, by Dr. Merle E. Scott, Massillon, on "Eye and Ear Injuries from the Standpoint of the Practitioner, the Employer and the State Industrial Commission"; Dr. William M. Skipp, Youngstown, on "Preoperative and Postoperative Treatment of Exophthalmic Goiter," and Dr. Verne A. Dodd, Columbus, "Some Considerations in the Treatment of Fractures."——The obstetric and gynecologic section of the Academy of Medicine of Cleveland was addressed, February 5, among others by Drs. William D. Fullerton and Robert L. Faulkner on "Hysterectomy: The Comparative Study of One Thousand Cases."——The first art and hobby exhibit of the Cleveland Academy of Medicine, which was held recently, was a success, it is reported. Among the things exhibited was the Museum of Historical and Cultural Medicine of the Medical Library Association.

PENNSYLVANIA

Society News.—Dr. Robert H. Herbst, Chicago, addressed the Pittsburgh Urological Association, February 10, on "Management and Treatment of Obstruction at the Vesical Neck."——Drs. Grover C. Weil, Lloyd W. Johnson and Gustav F. Berg held a discussion on traumatic surgery, February 13, before the Pittsburgh Surgical Society.——Dr. Henry R. M. Landis, Philadelphia, was reelected president of the Pennsylvania Tuberculosis Society for the third consecutive year at its recent annual meeting. —— The Cambria County Medical Society was addressed, February 13, at Johnstown, by Dr. Harry Lowenburg, Philadelphia, on "Diagnosis and Treatment of Pneumonia in Children, with a Consideration of the Treatment of Pneumococcic Empyema by the Intrapleural Injection of Optochine," and by Dr. Samuel S. Woody, Philadelphia, "Present-Day Hospital for Contagious Diseases."——The Medical Club of Eastern Delaware was addressed, January 28, by Dr. Richard A. Kern, Philadelphia, on "The Clinical Aspects of Human Abortus Infection."

Philadelphia

Personal.—Dr. John M. Fisher was elected president of the Medical Club of Philadelphia, January 17, and Dr. William S. Wray, secretary.——William Linwood Hammond, Ridley Park, an assistant United States attorney, will succeed his uncle, the late Dr. Levi Jay Hammond, as director of the George S. Cox Medical Research Bureau, the principal work of which is to find a cure for diabetes.——Dr. Ray Lyman Wilbur, secretary of the interior, and Dr. Chevalier Jackson, professor of bronchoscopy and esophagoscopy, Temple University School of Medicine, received the honorary degree of LL.D. at the Founder's Day exercises of Temple University, February 14.

Honorary Police and Fire Surgeons.—In recognition of their work during the last twenty years in assisting policemen and firemen in need of medical attention, the police and fire surgeons division of the department of public safety appointed as honorary members the following physicians: Drs. John B. Deaver, Willis E. Manges, Robert G. Torrey, Robert H. Ivy and Fielding O. Lewis. Dr. Hubley R. Owen, chief of the police and fire surgeons, said: "If we attempted to give official recognition to all the physicians and surgeons in this city who have assisted our medical division in the treatment of policemen and firemen, the list would include practically the entire medical census of Philadelphia. . . . Dr. John Chalmers Da Costa, for many years, did practically all the operations for firemen and many policemen. He is an honorary surgeon of the fire department."

Society News.—The Philadelphia County Medical Society presented a symposium, February 12, on "The Diagnosis and Treatment of Pulmonary Abscess"; the speakers were Drs. Elmer H. Funk, John T. Farrell, Jr., L. H. Clerf and John B. Flick.——Dr. Lee Wallace Dean, professor of otolaryngology, Washington University School of Medicine, St. Louis, addressed the Philadelphia Laryngological Society, February 12, at the College of Physicians on "Accessory Sinus Disease in Children." —— The Obstetrical Society of Philadelphia was addressed, February 6, by Max Trumper, Ph.D., on "Fundamental Biochemical Factors in Pregnancy," and by Dr. Leonard Averett on "Kerr Cesarean Section," illustrated.——The Philadelphia County Medical Society will hold an open forum on venereal disease control, February 26. —— The new building (THE JOURNAL, Oct. 12, 1929, p. 1153) of the Jefferson Medical College will be dedicated, February 22. The dedicatory address will be given by George B. McClellan, professor of economic history, Princeton University. Dr. P. Brooke Bland will deliver "Remarks on Obstetric Pedagogy and Maternal Mortality"; Dr. Charles E. G. Shannon, "What the Practitioner Should Know About Cataract and Squint"; Dr. Thomas C. Stellwagen, "Relation of Prostatic Infection to Systemic Disease"; Dr. Edward L. Bauer, "Present Status of the Treatment of Scarlet Fever and Measles"; Dr. Thomas A. Shallow, "Management of the Hydrocephalic Patient"; Dr. Willis F. Manges, "The Relation Between Chronic Sinus Infection and Lung Lesions"; Dr. John B. Flick, "Indications for Surgical Intervention in Lung Disease," and Dr. Frank C. Knowles, "Recent Advances in the Treatment of Syphilis."——The annual smoker of the Medical Alumni Association of Temple University School of Medicine was held at the Bellevue-Stratford Hotel, February 1.——Plans were completed, February 1, for a Philadelphia Association of Tuberculosis Clinics. The formal organization will take place, February 19; Dr. Abraham J. Cohen, chief of the city division of tuberculosis, will be acting president. The association will coordinate and seek to raise the standards of the twenty-three chest clinics conducted in the city.

TEXAS

Society News.—In Texarkana cases of smallpox increased from thirty-five to between 250 and 300 in the three days ending January 12, it is reported. —— The Nueces County Medical Society was addressed, January 9, at Corpus Christi, by Dr. Lydian P. Guttmann on "More Efficient Fracture Surgery," and Dr. Oscar H. Peterson, "Radical Mastoid Operations."

Health at San Antonio.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of 30 million, for the week ended January 25, indicate that the highest mortality rate (26.1) was for San Antonio, and that the mortality rate for the group of cities as a whole was 13.2. The mortality rate for San Antonio for the corresponding week last year was 19.1 and for the group of cities, 17.8. The annual rate for sixty-five cities for the first four weeks of 1930 was 13.4, as against 19.2 for the corresponding weeks in 1929. Caution should be used in the interpretation of weekly figures as they fluctuate widely. The fact that some cities are hospital centers for wide areas outside the city limits or that they have a large negro population may tend to increase the death rate.

VIRGINIA

Bills Introduced.—S. 116 proposes to amend the workmen's compensation act by providing, among other things, that for a period not exceeding sixty days after an accident the employer shall furnish the injured employee such necessary medical attention as the nature of the accident requires, and for such time thereafter as the industrial commission shall require, and in addition such surgical and hospital service and supplies as may be deemed necessary by attending physicians or the industrial commission. H. TN. 182 proposes to amend section 26 of the workmen's compensation act, which limits the liability of the employer for furnishing medical services to the injured employee to sixty days after an accident, by providing that in the discretion of the industrial commission the medical attention for which the employer is liable may be extended to not to exceed 180 days. H. TN. 311 proposes to regulate the sale of barbital.

GENERAL

Borrowed Lamps.—A manufacturer of ultraviolet lamps in Chicago writes that a former individual dealer has been going among doctors in Kentucky, southern Ohio and Indiana asking the loan of their lamps so he could make immediate delivery on orders to some other doctor, and promising, as soon as his lamps arrive, to replace the borrowed lamps with new ones. He is not one of their representatives. Several attempts have been made to get in touch with this individual but to no avail. Physicians should take warning and not be duped.

United States Pharmacopeial Convention.—The U. S. Pharmacopeial Convention will meet in Washington, D. C., on May 13, 1930. It is important that all medical colleges and state medical associations which are eligible to send delegates elect such delegates promptly, with the understanding that the delegates will attend. Problems are coming before the convention which are of great interest to the medical profession and unless adequate representation of physicians is present, scientific medicine is not likely to be properly represented in the work.

Review of Literature on Vitamins.—The bureau of home economics, U. S. Department of Agriculture, has prepared a circular on "Vitamins in Food Materials" (Circular 84), which tabulates the occurrence of vitamins A, B and C in 160 foodstuffs, and indicates the vitamin content not only of raw fresh food but in many cases of the juice, pulp, green leaves, bleached leaves, and other separate parts of the same food. The effect of cooking, canning, dehydration, storage and other processes on the stability of vitamins is indicated in some measure by the data presented. The effects of the different vitamins in promoting growth and health, and the symptoms of disease and of abnormal conditions resulting from a lack of vitamins in the diet are shown in pictures of animals fed different diets at the bureau. The entire scientific literature on vitamins published here and abroad has been reviewed in order that this study might be made. The circular includes references to about 460 of the most important of these publications.

Society News.—The American Public Health Association will hold its fifty-ninth annual meeting at Fort Worth, Texas, October 27-30, with headquarters at the Hotel Texas. Homer N. Calver, 370 Seventh Avenue, New York, is executive secretary of the association.——Announcement is made of the fact that the *Weekly Epidemiological Record,* heretofore not placed on sale but available only to officials and other persons selected by the Secretariat of the League, is now to be had on a regular subscription basis through the World Peace Foundation at Boston; the issues arrive in this country about three weeks after the date of publication. The subscription price quoted is $3 a year. The *Record* carries no advertising and is distributed on a nonprofit basis.——The next annual meeting of the American Physiotherapy Association will be held in Detroit, June 23-26, with headquarters at the Fort Shelby Hotel.——The fifty-seventh annual meeting of the National Conference of Social Work and Associate Groups will be held in Boston, June 6-14, with headquarters at the Statler Hotel. Howard R. Knight, 277 East Long Street, Columbus, Ohio, is general secretary.

Medical Bills in Congress.—S. J. Res. 93, introduced by Senator Heflin, Alabama, and S. 2814, introduced by Senator Gillett, Massachusetts, proposing to provide for monuments to Major General William Crawford Gorgas, late Surgeon General of the Army, have been favorably reported. H. R. 8574, proposing to transfer to the Attorney General certain functions in the administration of the National Prohibition Act, has passed the House. H. R. 9235, proposing to authorize the U. S. Public Health Service to provide medical services in federal prisons, has passed the House. S. 3282, introduced by Senator Copeland, New York, proposes to amend the World War Veterans' Act to permit the hospitalization of acting assistant surgeons, medical and dental, in the Army and Navy, who served by appointment or contract during the Spanish War, the Cuban occupation, the Philippine Insurrection, and the China Relief Expedition. S. 3340, introduced (by request) by Senator Metcalf, Rhode Island, proposes to provide for the vocational rehabilitation of persons disabled in industry or otherwise. H. R. 9411, introduced by Representative Fulmer, South Carolina, proposes to authorize an appropriation of $1,000,000 for the erection of a veterans' hospital in South Carolina. H. R. 9435, introduced by Representative Celler, New York, proposes to remove the limitations imposed on physicians with respect to the prescribing of medicinal wines and liquors. H. R. 9438, introduced by Representative Hope, Kansas, and S. 3411, introduced by Senator Capper, Kansas, propose to authorize an appropriation of $1,500,000 for the erection of a veterans' bureau hospital and regional office in Kansas. H. R. 9586, introduced by Representative Bloom, New York, proposes to regulate traffic in certain clinical thermometers.

Chiropractors at the Bier.—Much wailing was heard at a recent meeting of the American Bureau of Chiropractic in New York as William H. Werner of Richmond Hill and B. J. Palmer predicted the death of chiropractic within two years unless members sustain the dying cult by paying a committee $25 a week for an indefinite period. To forestall what would be a calamity to members only, a new leader of chiropractic was crowned in the person of "Dr." Werner. According to Alva Johnson, in the New York *Herald Tribune,* the new king is in striking contrast to the beloved but tottering B. J. His well barbered hair was parted in the middle and paraffined, whereas B. J.'s long and shaggy locks were held in tow at this meeting by a rubber band. The new monarch, in speaking of the ruins into which the chiropractic center at Davenport had fallen in recent years, said: "I tell you, friends, it gave me a heartache to see those great buildings nearly empty and that great school almost without pupils. . . . If you understood all, every chiropractor within sound of my voice would gladly contribute, would sign up and guarantee to contribute $25 a week to this cause, and in a few months you will not only get $25 a week back, but hundreds of dollars a week. That can be done. That is being done. But, wait a minute." Werner assured the audience, however, that he wants money from no man who contributes solely to double his income; he wants help from those who are interested in helping suffering humanity. "It is all wrong for you to go on cursing and damning B. J. It is not right, folks. He has his little weaknesses, as who among us has not?" On an upper floor of the hotel, however, B. J. had fifty neurocalometers which he was anxious to lease at $150 per. The former king advised his colleagues to improve their business by using this machine in diagnosing their cases. "The trouble with you fellows," B. J. is reported to have said, "is you're trying to tell your patients something and expecting your patient to believe something you don't believe yourself. The result is that your patient knows you're lying to him. Now I look them in the eye. And they know I know that I know that I am not kidding them and they're not kidding themselves and they're not kidding me. And they're perfectly willing to lay down the big money." The golden calf has been sick for some time. Its decline was noted by the leader himself at a meeting in Philadelphia some two years ago. What will B. J.'s neurocalometer say in two years when applied to the cult's backbone?

CANADA

Canada Builds National Research Laboratories.—The government of Canada has opened bids for the construction of national research laboratories which will cost about $3,000,000 and, it is said, will be among the best in any country. The four story structures, which will be in Ottawa on the banks of the river, will be in the form of a figure eight, 418 feet long and 176 feet deep. They will provide an assembly hall, library accommodation for 300,000 volumes, and rooms for the staff and various scientific societies. The following divisions are planned: physics and engineering physics, industrial chemistry, economic biology and agriculture, industrial engineering, textiles, division of standards and other divisions which will endeavor to improve industrial processes and to develop natural resources. A number of the heads of these divisions have already been appointed, and temporary laboratory space has been provided. The new buildings are expected to be completed in 1931.

Rural Families Bring Beds to Traveling Clinic.—The Alberta government's traveling clinic, it is reported, will soon be taking to the road for its fourth season. This motor caravan was organized by the department of health to carry the benefits of modern surgery and dentistry to children in the sparsely settled farming areas of the provinces of Alberta. Last year with a personnel of two physicians, two dentists and four nurses, it traveled from the southern border to the Peace River country in the north. Under the plan of operation, the community which wishes a clinic forms a local committee, secures the cooperation of at least ten school districts and arranges dates with the department of health. Prior to the clinic's visit a public health nurse makes a preliminary survey of the district and recommends those who she feels need attention. The first day of the clinic is given over to examinations; on the second day operations are performed. The families bring their own beds. Last season, it is said, forty-one clinics were held. Dr. Roderick T. Washburn, Edmonton, head of the group, made 4,413 examinations and performed 1,408 tonsil and adenoid operations and 240 minor operations. The dental staff made 4,273 examinations, put in 1,150 fillings and extracted 2,775 teeth.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 18, 1930.

The Increase in Street Accidents

The constantly rising tide of street accidents and of their fatalities has caused general alarm and is much exercising the authorities, who are endeavoring to improve the regulation of traffic. The London Coroners' Association has suggested that all drivers should produce a certificate of ability to drive a motor vehicle before being granted a license; also that crossing places for pedestrians should be defined on streets with car tracks and refuges at such places as may be agreed on by the ministry of transport in conjunction with the commissioner of police. The city of Westminster, which is part of London, is in favor of extending the system of specified crossing places and forbidding promiscuous crossing. The provision of subways is urged by various public bodies, their compulsory use by some. The London Safety First Council recommends that when policemen are standing in the center of the roadway they should be clothed in a white coat, especially during hours of darkness. Several bodies call attention to the need of additional measures for traffic passengers entering or leaving street cars at stopping places and it is suggested that the practice of passing stationary street cars on the near side should be prohibited. With regard to scientific investigation into the causes of street accidents, the London Coroners' Association would welcome the attendance at inquests of a trained official from the ministry of transport with power to put questions. The Pedestrians Protection Association favors a speed limit of 20 miles an hour for all motor vehicles.

A conference of local authorities in the London traffic area and of organizations representing all classes of users of highways, convened by the minister of transport, has been held to consider means of reducing the number of street accidents in London. Delegates to the number of 300 were present. Mr. Morrison, minister of transport, said that street accidents were the subject of much public anxiety and had reached alarming numbers. He emphasized the importance of children being educated with regard to traffic. They had to impress on users of highways the dangers. They were gradually getting more scientific knowledge as to the causes of accidents and the remedies. Considering the narrow, tortuous streets of London, its huge population and its congested traffic, London traffic was one of the most wonderful things the world had to show. Dr. D. A. Cole of the National Safety First Association said that there was a strong feeling in the medical profession that there should be a definite test to show that a man was not blind or deaf, an epileptic or a sufferer from heart disease before he was licensed to drive a motor vehicle. Sir Henry Maybury, chairman of the Traffic Advisory Committee, said that this was a most difficult question. After hearing all points of view, the committee came to the conclusion that any test which it could impose would not be worth the trouble and irritation caused. More than 2,000,000 people in this country held driving licenses. How could they tell unless a test was carried out under ordinary traffic conditions and under extreme traffic conditions whether a person was fit to be entrusted with a vehicle or not? The committee had also considered a medical test and decided that it was not practicable. But it recommended that a person should have to make a declaration before obtaining a license. A motion that some definite test of skill in addition to a declaration of physical fitness should be made a qualification for a driving license was put to the meeting and lost. Recommendations for specified crossing places for pedestrians, to be indicated by white lines on the road and to be used compulsorily, were carried. So also were recommendations for subways at dangerous road junctions. The proposal in the road traffic bill (reported previously) to abolish the speed limit was criticized. On behalf of the London Coroners' Association it was moved that the speed limit be retained. Whatever might be said for the proposal in the country, it was utterly unjustifiable in the case of London. Coroners' juries derived great assistance in respect to the question of dangerous driving from a statutory definition of proper speed. There were too many reckless drivers in London and abolition of the speed limit would add to their numbers. The motion was carried by 72 votes to 40. A resolution was carried recommending to school teachers "safety first" instruction of children. So also was one that pedal cyclists should carry a rear light instead of a reflector.

Fatal Hydrocyanic Acid Poisoning in a Laboratory Worker

An inquest was held on a youth, aged 17, who died from hydrocyanic acid poisoning produced in an unusual manner. He was employed as a chemical laboratory assistant at the works of a firm of assayers, refiners and chemical metallurgists. While cleaning out a dump in a tank containing a silver cyanide deposit he was overcome by the fumes. The coroner, Dr. F. J. Waldo, who has held many inquests in London, said that he had never before had a case of poisoning from the fumes of silver cyanide. Sir Bernard Spilsbury, government pathologist, said that he would not be surprised to hear that this was the first recorded case for a hundred years.

Escape of a Radium Needle into the Lung

The difficulties and accidents of radium treatment can be ascertained only through the increasing experience with this new method. An inquest has been held under the following circumstances: A man suffering from cancer of the nose received radium treatment at Charing Cross Hospital on three occasions, the last, October 27. Forty-eight hours after the radium apparatus had been in position it was found that the needle had become unscrewed from its cap and had disappeared. Roentgenograms revealed that the needle was in the lung. It was removed, November 1, and the patient at first made good progress but died, December 23. Dr. L. G. Brown, assistant surgeon to the hospital and a radium specialist, produced the case containing the radium needle. In answer to the coroner he said that its value was $5,000. He explained that the cap of the needle was held in position by wire but the needle had become unscrewed, probably as the result of movements of the pharynx. The coroner said that it would be for the makers of the instrument to consider the accident and take means to prevent it from occurring again. Dr. Katharine Clarke, house physician, said that the needle contained 50 mg. of radium. She screwed on the cap tightly before the needle was inserted. Dr. Weir, pathologist, stated that the man died from empyema following the operation for removal of the needle.

Protest Against Compulsory Treatment of Venereal Disease

Some time ago a conference of local authorities, held under the auspices of the British Social Hygiene Council, urged the corporations of Edinburgh and Glasgow to continue their efforts to obtain power for the compulsory treatment of venereal disease—a proposal already rejected by parliament with the approval of the ministry of health. In a letter to the *Lancet*, Dr. J. H. Sequeira, consulting physician to the skin department, London Hospital, and late chairman of the Society for Prevention of Venereal Diseases, protests against the proposal to make the treatment of venereal disease compulsory and incidentally throws much doubt on the value of the modern treatment of syphilis. The decline in the number of cases of syphilis since 1920 in different countries suggests to him the "decline curve of many kinds of epidemics and may therefore have no

relation to treatment." Even in 1913, the year of the International Congress in London, which might be called the apotheosis of arsphenamine, *Therapia magna sterilisans* was already shaken, for combination of mercury with arsphenamine was advocated. "It soon became evident that intravenous injections were of greater immediate danger to the patient than syphilis." To avoid grave nerve complications and injury to the liver and the skin it became necessary to give smaller and smaller doses of arsphenamine. Now Klauder has shown that repeated small doses of arsenicals may produce in animals arsenic-resistant spirochetes, and there is good reason to believe that this occurs in man. Long ago Finger pointed out the risk of converting what was mainly a disease of skin and mucous membranes into one in which the heart and great vessels and central nervous system were involved. Even Harrison, an advocate of repeated injections, says that in a long series "we may be damaging a very necessary ally, the tissues." He has now reverted to spaced doses, a principle followed by Drake and Thompson at University College for years. The most disquieting evidence is from Professor Warthin, who, after making at Manchester a large number of necropsies on syphilitic patients who had prolonged arsphenamine treatment, stated that he had not seen a case of cured syphilis. Most of the organs showed active disease. Langer reported an enormous increase in aortic disease—from 33 per cent before arsphenamine was used to 83 after it was used, and his observation is confirmed by Bergel and Rosenthal's statistics. Cesar Boeck held that syphilis produced its own immunity and that so-called specifics removed only symptoms. His patients were practically untreated and yet in a longer series carefully followed up over many years by Bruusgaard the incidence of paresis was only 0.6 per cent. Forty years ago, Hutchinson taught that "time as well as mercury cured syphilis." The African races, who suffer from widespread syphilis, rarely show paresis or tabes, though almost untreated. This cannot be due to a different strain of spirochete, for nervous complications occur in Europeans who contract the disease from them.

Oxygen and Protoplasmic Movements

Dr. C. F. A. Pantin, who has worked for several years on the physiology and biochemistry of marine organisms at the biologic station in Plymouth, has reported some careful investigations on an ameba which lives in sea water and can be cultivated in a laboratory. He elaborated a method of keeping amebas under observation when wholly or partially deprived of oxygen. In the complete absence of oxygen, movements went on for some time but gradually slowed. Up to a point the process was reversible: the addition of oxygen, if not too long delayed, restored the power of movement, but there was a stage of irrecoverable exhaustion. It seemed that normally some chemical store of energy is formed in the presence of oxygen and is used for movement without the need of free oxygen, so that activity can continue for a limited period. Dr. Pantin made experiments with cyanides, sulphides, alcohol and chlorbutanol, which he introduced into the sea water containing the amebas. The cyanides and sulphides produced almost the same effect as absence of oxygen. Movements went on for a certain time and then were slowed and finally arrested. It seemed that these substances acted directly on the respiratory processes, inhibiting them and so preventing the normal process of storing up energy. On the other hand, alcohol and chlorbutanol had no effect on the oxygen processes but produced incoordination of movement. Thus one could speak of a drunken ameba in the same sense as of a drunken man. What corresponds to the brain in the little differentiated protoplasm of the ameba was affected as the brain of man is. In recent papers contributed to the Royal Society, Dr. Pantin thus sums up his results: Ameboid movement is brought about by a process that takes place in the absence of oxygen, but the process produces adverse effects which gradually inhibit movement unless oxygen is present. Normally these effects are removed by some oxidative recovery process, which, however, is inhibited when the oxygen pressure falls below a certain minimum or when cyanides or sulphides are present. In the absence of oxygen, cyanides do not affect the behavior of amebas, thus showing that their action is on the oxygen process. Alcohol and chlorbutanol in a certain minimum concentration produce incoordination of movement, and about ten times that strength inhibits movement completely. Their action appears to be direct and not through the oxygen process. The formation of a store of energy in the presence of oxygen, which can be used in its absence but requires fresh oxygen for restoration, is of course exactly analogous to what occurs in muscular contraction in man.

PARIS

(From Our Regular Correspondent)

Jan. 8, 1930.

Experimental Encephalitis and Dementia Paralytica

Mr. Levaditi, of the Institut Pasteur, has made an observation that appears to explain the pathogenesis of dementia paralytica. In experimental encephalitis produced in animals with the spirochete of recurrent fever, he found that these parasites, which are usually found only in the granular form, appear sometimes in the form of spirilla when they have disappeared from the other organs. He concludes from this that the infection of the brain with the spirochete which occurs in dementia paralytica is of the same nature. The organism recovers its spirillar form coincident with the attacks of apoplectiform icterus, while in the intervals it persists in the latent state in the brain in the granular form.

Discussion on Embolism

The Société de chirurgie de Lyon recently discussed the subject of fatal embolism. Mr. Patel had observed six cases: four after fractures of the neck of the femur, two of which had come to operation; one in a patient with fibroma that was not operated on; and a sixth in a patient who had undergone a cholecystectomy, after the removal of the drainage wicks. He found that, in operations on fibromas, venous thromboses of the lower limbs were rather frequent but that grave embolisms were exceptional. The same thromboses may be observed after the rapid and assuredly aseptic removal of ovarian cysts. Patel explains this by the fact that the removal of the cyst causes a sudden abdominal decompression, accompanied by a sudden dilatation of the large veins; the chafing and rubbing that the tunica interna of these vessels undergoes prepares the way for the thrombosis. Mr. Guilleminet ascribes great value to the acceleration of the pulse and to the increase of temperature as a premonitory sign of grave phlebitis. To these may be added the reduction of the beating of the femoral artery at the pelvic outlet, a sign that precedes the pain and the appearance of the edema. But the most interesting point of the discussion was the opinion of the surgeons of Lyons on the effects of the application of leeches, which have been extensively employed of late to prevent phlebitis. Guilleminet had observed two fatal embolisms, one of which developed eight days after the application of leeches. According to his view, leeches are useful only for preventing phlebitis; when the existence of the phlebitis is confirmed, the application of leeches is useless and often dangerous. Mr. Condamin thinks that phlebitis may be regarded as a defense reaction that checks the further dissemination of infectious micro-organisms. The application of leeches may cause a liberation of blood clots, embolism and the propagation of the infection. He goes so far as to say that it would possibly be well to produce phlebitis by ligating the iliac veins, as has been proposed in the treatment of puerperal infection. Professor Bérard had observed five cases of fatal embolisms, two of which occurred after the

application of leeches. Professor Tissier confirmed the observation of Mr. Guilleminet on the value of the reduction in the beating of the femoral artery as a premonitory sign of phlebitis of the lower limbs. To this may be added a condition of malaise, anxiety and insomnia, which are likewise premonitory signs in persons operated on. It is peculiar that, if the Wassermann test is applied to these, it is often found to be positive. Mr. Goullioud thinks that phlebitis develops in persons who are predisposed—in anemic persons and persons with varicose veins of long standing. The infectious origin of thrombosis, which is fully established in obstetrics, may be in gynecology of endogenous origin. Subtotal hysterectomy, which often allows an infected cervix to persist, appears to predispose the patient to postoperative phlebitis. Goullioud had observed five cases of fatal embolism after hysterectomy. It is the operation that produces embolism most frequently; it is rare after myomectomies. He has never had a fatal case after myomectomies.

Academy Desires Modification of Social Insurance Law

The Academy of Medicine has completed the prolonged discussion which developed before that body on the social insurance law. Although many changes have been made in the law, it finally goes in effect in February unless the government, in view of the general protest, postpones its application. The discussion before the academy, which has constituted itself the defender of the medical profession, closed with the passage of resolutions to be presented to the minister of hygiene. Three resolutions were considered, one proposed by Mr. Strauss, senator and former minister, which approved the law; a second by Chauffard and Weiss, which opposed it, and a third by Mr. Balthazard, president of the Confédération des syndicats médicaux de France, which proposed certain modifications. Mr. Hayem proposed, during the session, a fourth resolution, and, after a rather long discussion, in which Hayem, Pinard, Strauss, Chauffard and Balthazard took part, the academy adopted, with slight modifications, the following resolution of Mr. Balthazard:

> The Academy of Medicine, being impressed by the communications made before its tribunal and likewise by the inferences drawn from the applications of social insurance in Germany and, more particularly, in Alsace and Lorraine, expresses the desire that the government and parliament, taking account of the views of the physicians, may subject the law to such indispensable modifications as will prevent abuses, maintain the practice of medicine in accordance with traditional French standards, and insure the respect of the circles of scientific research, and the rights of university and hospital instruction.

This paragraph was inspired by the observation, reported from Alsace, of the deplorable influence that social insurance has had on the medical profession, certain members of which have aided in defrauding the government, while the *krankenkassen* erected special hospitals, where the students went to receive a rapid preparation for the immediate practice of medicine, thus neglecting the truly scientific instruction of the Faculté de médecine de Strasbourg.

Criticism of Public Health Administration in France

Dr. Barbary, who is departmental inspector of health, correspondent of the Academy of Medicine, and mayor of the commune in which he resides, has, in his threefold capacity, observed defects in the law of 1902, which continues to be the guide in public health work in France. In a recent address before the academy, he gave vent to some outspoken criticism. The law as it stands entrusts the mayor with the execution of all hygienic measures, while the control is left to the departmental inspector. In the larger communes, the mayor has not alone to deal with the administrative unit, but it is at the same time the electorate. It is therefore impossible for him to apply the measures of rural hygiene without fearing to make enemies of his constituents. In the absence of the mayor, the prefect may adopt measures pertaining to the maintenance of health; but his interventions are usually of a mild nature owing to political influences. The control service at present is represented by departmental inspection, which unfortunately is not compulsory but depends on the general councils of the departments, which are free to create it or not, and sometimes they make the necessary appropriation for this service and sometimes they refuse to do so. While there are some model inspection departments and others that function at least normally, many departments have only a rudimentary organization; others have none. There is no more complex rôle than that of departmental medical inspector of health; he must have knowledge of everything that concerns the protection of public health (medicine, the exact sciences, public hygiene, social hygiene, child hygiene, epidemics, prophylaxis, private hygienic societies). Dr. Barbary holds that these inspectors and the directors of the bureaus of health should be state officials, and that health inspection should be made obligatory in all the departments. Departmental inspection in charge of medical hygienists, state officers appointed after passing competitive examinations, and a carefully selected group provided with modern equipment should constitute in the future the basis of the reorganization of health inspection under the authority of a minister of health, which office should be under the civil service and not subject to the vicissitudes of politics. Only then will the reorganization of the institutions of public health, in advocacy of which the Academy of Medicine has issued another resolution, become an accomplished fact in France. Dr. Barbary demands, furthermore, that in the future all health resorts without exception, even those in which the sedentary population is under 2,000, shall be obliged to have an organized sanitary control.

ITALY

(From Our Regular Correspondent)

Dec. 31, 1929.

New Dispensaries of Mental Hygiene

To create opportunities for gratuitous consultations for nervous and mental diseases and to render moral and financial assistance to patients who have been dismissed from the psychiatric hospital, so that they may make a new start toward a normal social life, three dispensaries of mental hygiene have been established at Milan, Lodi and Vimercate, all under the direction of Professor Antonini. By means of visiting assistants, domiciliary aid will be given the sick.

Rice Ration of Army Increased

The minister of war has ordered that the weekly ration of rice for each soldier in the army shall be increased from 300 Gm. to 400 Gm. The minister of national education has, in turn, asked the schools and the national institutes that serve meals to put rice on the menu as often as possible.

Organization of Physicians to Aid Physical Culture

The Federazione italiana dei medici sportivi was recently established. Members will be recruited among those physicians who devote themselves particularly to the study of technical and scientific questions concerning physical culture. On the physicians will devolve the duty of visiting all the members of the athletic societies, not only in sickness but also periodically in health, and of determining for what type of sport the members are adapted. The seniors in medical colleges who desire to aid the sport physicians may become members of the federation. Courses in the theory and practice of medicine as applicable to athletic activities will be organized.

The National Surgical Congress

At the thirty-sixth national congress of surgery, held in Genoa under the chairmanship of Professor Tusini, the first paper, on the subject of anesthesia, was presented by Prof. Francesco Sanvenero of Genoa. The speaker had obtained information from the surgeons of Italy by means of a ques-

tionnaire, on the method of anesthesia that each preferred. Almost every surgeon declared in favor of the use of ether and for the diffusion of local and regional anesthesia even for operations on the hollow organs. Sanvenero gave his own experience in the Genoa clinic, with regard to new methods of anesthesia with gas, particularly acetylene. He expressed his belief that combinations such as nitrous oxide-oxygen, acetylene-oxygen, and ethylene-oxygen are useful anesthetics; the last two, however, involve the danger of explosion. The gases do not exert deleterious action on the various organs. In numerous trials made at the Genoa clinic, acetylene did not disturb the functioning of the cardiovascular system, the respiratory system, liver or the kidneys, nor the acid-base equilibrium and the morphology of the blood. The gases are indicated in those cases in which the use of ether and chloroform is contraindicated, and especially in patients who are in a grave condition. The use of chloroform is being restricted in Italy, while ether is being more widely used, especially when used with the Ombredanne mask, in combination with carbon dioxide. Ethyl chloride is useful to initiate ether anesthesia and for minor operations. Anesthesia produced by mixed substances (except the combination ether-chloroform-oxygen) does not present any great advantages. Of the rectal anesthetics, tribromethylalcohol is suitable only for light anesthesia, for it becomes dangerous if used for complete anesthesia with muscular relaxation. Intravenous anesthesia is little used. Regional anesthesia, not only by circumscribing the operative field but also by infiltration of its distant nerve trunks, can be used for the greater part of operative interventions. Spinal anesthesia is being employed considerably in both Italy and France.

Professor Bufalini of Pisa discussed postoperative pulmonary complications in relation to anesthesia. The most frequent complications are bronchitis and pneumonia, in connection with which two pathogenic mechanisms have been observed, one acting by the bronchiogenic and one by the hematolymphogenic route. In the bronchiogenic infection the irritative action of the anesthetic is significant, if it collects in the bronchial tree. This is due chiefly to lack of expectoration ascribable to pain from the laparotomy wound or resulting from the diminished depth of the respiratory excursions, as is observed after operations on the abdomen. Hence the action of the anesthetic is dependent on the type of the operation. As to hematogenic pulmonary complications, statistics agree in ascribing to ether a higher percentage than to gas or to local anesthesia. Lundy, in comparing two series consisting of 600 operations on the stomach and liver, some of which were performed with ether and some with ethylene-ether anesthesia, found that bronchopneumonia developed in 1.5 per cent of the cases in which ethylene-ether was employed and in 3.6 per cent of those in which ether alone was used. As for pulmonary embolism, it is difficult to establish a pathogenic relation between this complication and the type of anesthesia used. According to more recent statistics, ether is in a position of advantage as compared with gas. The percentage of pulmonary embolisms occurring with the use of spinal anesthesia is said to be less than with ether. In recent years, massive collapse of the lung, as associated with anesthesia, has been much studied. Atelectasis may be extended to both the lungs, or it may be confined to one lung or even to a single lobe. It may follow any type of anesthesia, including local anesthesia.

Prof. Giovanni Bianchi of Genoa spoke of postoperative pulmonary complications from the radiologic point of view. By means of a portable apparatus, the speaker examined 173 persons who had undergone operations and found that the pulmonary complications are nearly always bilateral and basal, and that the atelectasis is more frequent than that caused by physical means. Communications on the subject were presented by Raffo, Marzacura, Pozzi, Filippi and others.

SPONTANEOUS GANGRENE OF THE LIMBS

The second topic on the program, "Spontaneous Gangrene of the Limbs," was considered jointly with the Società di medicina interna. Professor Ciminata of Turin explained various surgical methods now in use for the conservative treatment of spontaneous gangrene of the limbs. The methods most commonly used are: operations on the sympathetic nervous system, suprarenalectomy, arteriovenous anastomosis, and operations on the peripheral nerves. In gangrene due to arteriosclerosis, surgery has attempted periarterial sympathectomy with various results. This operation has certain dangers. Among 216 cases of gangrene of the limbs due to embolism, in which embolectomy was performed, 145 were described in the Scandinavian literature. The result of this operation depends on how early it is performed, on the condition of the heart, and on the hospital. The speaker discussed at length endarteritis obliterans as the cause of gangrene of the limbs. Oppel of Leningrad interprets the etiology as a suprarenal hyperfunctioning. He was the first to perform partial suprarenalectomy (left) with a curative intent, and he secured encouraging results. The series of cases in which this method has been employed are not large as yet: Oppel himself reported 115 cases; other Russian surgeons have reported sixty-two, Leriche (in France) eight, and Donati, Pieri and Serafini (in Italy) five. The results obtained do not seem as yet definitive; in many cases, the removal of the left suprarenal gland did not prevent the amputation of the limb. But if the intervention is made in the initial stage of the disease, the beneficial effects appear to be permanent. Other methods of treatment employed in gangrene due to endarteritis obliterans were periarterial sympathectomy (with results mainly negative), resection of the lumbosacral sympathicus (only twenty cases thus far), arteriovenous anastomosis (results not very encouraging), ligature of the veins, and amputation.

Several other sessions were taken up with the reading of papers. Professor Alessandri of Rome presented two films showing Billroth operations that he performed in his clinic. Rome was selected as the place of meeting of the next congress, and Professor Alessandri was chosen president. The topics on the program are to be "The Treatment of Craniocerebral Traumas Aside from Those Produced by Firearms," and "Hematuria: Diagnosis and Treatment," the second topic to be considered in collaboration with the Società de medicina interna.

BERLIN

(From Our Regular Correspondent)

Jan. 10, 1930.

Value of Raw Foods in the Scheme of Nutrition

Before the Berliner Gesellschaft für öffentliche Gesundheitspflege, Prof. H. Strauss discussed recently the value of raw foods in the general scheme of nutrition, a subject that has attained increased interest owing to the Gerson-Sauerbruch diet.

Raw food in general is a food that is eaten without having been brought in contact with fire. In a narrower sense, however, one understands at present by raw food an uncooked vegetable food. If one considers the raw food advocates as a subdivision of the vegetarians, one must distinguish a strict and a moderate school. From the standpoint of the general diet of the people, only the latter is to be considered. Strauss discussed only the conditions as presented by adults. The question as to whether the calory requirements of the organism can be met by an exclusive raw food diet may be answered in the affirmative, provided among the raw products there are sufficient oil, fat and sugar containing fruits, and the digestive tract has the capacity of adapting itself to a radical change in diet. The advantages of raw foods lie chiefly in their unchanged mineral and vitamin content. The cooking process deprives vegetables and other food products of a portion of their salts and vitamins. But if the question is asked, what deficiency

diseases in normal times are observed clinically with the average diet as the result of the withdrawal of salts in the process of cooking, it is not so easy to give a satisfactory reply; for, in those diseases in which a deficit of salts can be incriminated (rickets, osteomalacia and the like) it is not so much a question of an inadequate offering of salts as it is a decreased capacity of the cells to make proper use of them. Furthermore, by utilizing more the steaming and stewing processes in cooking, the loss of mineral substances can be reduced; then, if, as has been rightly recommended, the water in which vegetables are cooked is used for soups, there is a further gain.

More exact researches have shown that the vitamins present varying degrees of resistance to heat and to other methods of preserving foods, and that for the nutrition of the adult, above all, vitamin C (the antiscurvy vitamin) plays an important rôle. In Strauss's opinion, however, the vitamin problem in the nutrition of adults often receives undue emphasis; for cases of scurvy are rare in Germany. The designation of the lassitude that is common in the spring as a disorder due to vitamin deficiency is as yet only a hypothesis. Furthermore, it is questionable whether vitamin deficiency alone can be charged with the increase of mortality in late winter, or whether climatic conditions that cause an increase of respiratory diseases may not be a strong contributory factor. In spite of the impairment that fruit of various kinds undergoes through handling, drying and cooking, it appears to have usually an adequate vitamin content. Scheunert found in boiled potatoes 50 per cent of the amount of vitamin C contained in raw potatoes. Likewise stewed fruits and canned fruits contain, according to Scheunert, about 50 per cent of the vitamins present in the uncooked state, whereas vegetables contain, after being cooked, only about 5 to 10 per cent of the original vitamin C. Stepp, however, found in boiled white cabbage and in cooked tomatoes still a relatively good vitamin content. Also Friedberger's rats that were fed for nine months exclusively with boiled egg yolk showed no signs of avitaminosis. The existing observations are far from complete, and no exact researches have been made on the vitamin requirements of adults under varying conditions of life and during seasonal changes.

With respect to other properties of raw foods, their low content in protein substances, purine bodies, sodium chloride and calories is an outstanding factor. Therefore, it requires a careful selection of foods in order that a raw food diet may have sufficient content in calories and protein substances. As for the deficiency in purine bodies, we find an overloading of the body fluids with uric acid today only in a small number of diseases. A diet with the aforementioned properties of raw foods can be secured also with a suitable selection of cooked foods. By reason of their large volume and their large cellulose content, raw foods act favorably on the intestine but produce not infrequently intestinal disturbances, since the intestine of man—especially as regards its length—is of a different nature from that of herbivorous animals. Then, too, owing to the accelerated intestinal activity, large amounts of the nutritive substances found in the raw vegetables—particularly the protein substances—are lost. Recent researches of the Strasbourg clinic have, however, shown that the digestive juices, under the conditions that obtain in the human intestine, penetrate even the intact cells and digest out the food particles contained therein; thus, for example, the fats. Scheunert and Wagner, Widmark and Stenqvist, and others, have raised objections to the statements of Friedberger to the effect that not only the capacity to appease hunger but also the nutritional and caloric value of a number of food products are markedly lessened by cooking, and especially by overcooking, and Friedberger himself, on the basis of renewed researches, has limited his original pronouncements. As to the capacity of raw foods to appease hunger, it must certainly be admitted that raw vegetables are more "satisfying" than boiled vegetables. A significant disadvantage of raw foods is the fact that, unless the greatest care is taken to cleanse them thoroughly, infective agents and harmful ova may easily be introduced into the system. Then, again, not everybody can digest raw foods. Bircher-Benner ascribes to raw foods special "sun values" that are destroyed by the cooking process, but it has not yet been proved that these so-called sun values that are supposed to be destroyed by cooking impart to raw foods a superior and special value. On the other hand, the continued use of a diet poor in protein may rid the organism of nitrogen-containing refuse, and the raw food, through an acidification of the intestinal contents, may constitute a means of combating intestinal putrefaction. But, it may be asked, cannot the same, or almost the same, effects be secured with a vegetable diet consisting partly of cooked and partly of uncooked foods? And, in fact, Bircher-Benner does not insist on an exclusively raw diet but concedes in numerous cases bread, boiled or fried potatoes, and, under certain circumstances, occasionally even meat.

The final conclusion is that a medical approval of an exclusive raw food diet for the general purposes of nutrition is impossible, although emphasis may be laid on the oft repeated demands of physicians that the general diet of the people should comprise more fruit, vegetables and salads and less meat and meat products. Raw foods are to be recommended, then, only as forming a certain part of a mixed diet. Likewise, the questions of expense and transportation stand in the way of the adoption of an exclusive raw food diet as the general diet of the people. Especially in late winter and in spring the prices for fruit, vegetables and salads are so high that an exclusive raw food diet is more expensive than a mixed diet.

Night Sanatoriums

In soviet Russia night sanatoriums have been found so advantageous that in Moscow alone there are twelve such institutions, which are an important means for combating tuberculosis in the initial stages. In a recent number of the *Deutsche medizinische Wochenschrift*, Dr. Monheimer gives an account of his visit to a night sanatorium in Moscow, located in a side street, sitting back some distance from the street front and surrounded by a small park. The sanatorium in question opens at 4 o'clock in the afternoon and closes early in the morning. This one was exclusively for railway workers, 30 per cent of whom are employed at heavy labor and 20 per cent at light labor. Persons who are suspected of being tuberculous are sent here by the municipal health service for observation and treatment without giving up their position. If the patient grows worse, he is then sent to a tuberculosis sanatorium. When the factories close at 4 o'clock, the workmen who have been given instructions to that effect come to the night sanatorium, where they receive a shower bath at a temperature of 26 C. (78.8 F.). They then receive hospital garments and are assigned to a room. Dinner is at 6 and after dinner patients are expected to walk around in the park until 7, when they reenter the sanatorium for an hour's rest in a reclining posture. Three times a week, from 8 to 9, light work in the gymnasium or some other light form of athletics is carried out. At 9 the patient receives a light repast consisting of tea, milk and bread. He must retire at 10 at the latest, and is allowed to sleep until 6:30 in the morning. Before he goes to work, he is given a hearty breakfast and receives a light lunch to take along. The diet of the patient is so adjusted that he receives from 4,000 to 5,000 calories during the twenty-four hours. The stay in the night sanatorium covers, on the average, a period of eight weeks—sometimes nine weeks. According to the reports of the physicians in charge, 95 per cent of the patients are dismissed fully restored. Twice a week the patients are subjected to a careful medical inspection, on the basis of which the treatment for some is modified. In order to prevent the children of the patients becoming infected, they are placed in a special home near Moscow, where they remain during the stay of the father or mother in the sanatorium, and for some time afterward.

Marriages

GEORGE H. ADLER, Klamath Falls, Ore., to Miss Madelon K. Boie of Portland, at Silverton, Dec. 24, 1929.

JOSEPH W. LAMBERT, Antigo, Wis., to Miss Mary Alice Lash of Prentice, in Chicago, Dec. 31, 1929.

JESSE MARGOLIS, Heilwood, Pa., to Miss Fannie Lillian Meyers of York, in Philadelphia, January 5.

BENJAMIN N. SEARCY, Rising Sun, Ind., to DR. LUTHA WALKER of Logansport, January 26.

EDWIN DOUGLAS WARREN to Miss Jane Ann Bodine, both of Portland, Ore., Dec. 28, 1929.

FRANK C. WALCH to Miss Elfriedie Zuehlke, both of Clintonville, Wis., Nov. 30, 1929.

WILLIAM H. BAYER, Merrill, Wis., to Miss Sadie Prout of Minneapolis, Nov. 28, 1929.

DWIGHT B. SHAW, Pueblo, Colo., to Miss Irene M. Barnes of Okeene, Okla., January 25.

Deaths

Rice Kemper McClanahan ✠ Lieut., U. S. Navy, retired, Colorado Springs, Colo.; Jefferson Medical College of Philadelphia, 1898; entered the Navy in 1900 and was retired in 1905 for disability not incident to the service; served during the Spanish-American and World wars; was made a past assistant surgeon with rank of lieutenant in 1918; formerly secretary of the New Mexico State Medical Board; aged 55; died, January 14, at the Beth-El Hospital, of cholecystitis and chronic cholelithiasis.

Charles O'Donovan ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1881; past president of the Medical and Chirurgical Faculty of Maryland; emeritus professor of clinical medicine and pediatrics at his alma mater; member of the House of Delegates of the American Medical Association, 1921, 1923-1928; for many years chief of the medical staff of St. Joseph's Hospital; aged 69; died, January 23, at the Bon Secours Hospital, of heart disease.

Maurice L. Henderson ✠ Milwaukee; University of Illinois College of Medicine, Chicago, 1902; clinical professor and director of the department of obstetrics and gynecology, Marquette University School of Medicine; past president of the Milwaukee County Medical Society; formerly on the staff of the Marquette University Hospital and St. Joseph's Hospital; aged 50; died, January 13, in a local hospital, of heart disease.

Hardin K. Osburn, Owensboro, Ky.; College of Physicians and Surgeons, Baltimore, 1880; Bellevue Hospital Medical College, New York, 1885; member of the Kentucky State Medical Association; formerly member of the city council and city physician; aged 72; died, January 19, of acute lobar pneumonia, following a fracture of the left femur, received in a fall.

John Stewart ✠ Booneville, Ark.; Barnes Medical College, St. Louis, 1904; superintendent of the State Sanatorium; formerly superintendent of the Missouri State Sanatorium, Mount Vernon; aged 60; died, January 3, at the Barnes Hospital, St. Louis, as the result of an injury received in a fall from a horse several months ago.

John T. Graham, Wytheville, Va.; University of Virginia Department of Medicine, Charlottesville, 1888; member of the Medical Society of Virginia; formerly member of the state legislature; bank president; aged 65; died, Dec. 16, 1929, at the Jefferson Hospital, Roanoke, of carcinoma of the large intestine.

Adam Robert Bradley, Morrilton, Ark.; Memphis (Tenn.) Hospital Medical College, 1889; member of the Arkansas Medical Society; formerly bank president, member of the city council and member and chairman of the county board of education; aged 65; died, January 5, of injuries received in a fall.

Jerrie Allen Eldridge ✠ Boston; College of Physicians and Surgeons, Boston, 1890; Tufts College Medical School, Boston, 1897; member of the Kentucky State Medical Association; served during the World War; aged 63; died, January 13, at the Milford (Mass.) Hospital, of lobar pneumonia.

James Garrett Anderson ✠ Asheville, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1906; member of the Associated Anesthetists of the United States and Canada; on the staff of the Aston Park Hospital, where he died, January 10, aged 48, of acute gangrenous diverticulitis.

Amasa Merriman Brown ✠ Gloversville, N. Y.; University of Vermont College of Medicine, Burlington, 1908; member of the American College of Surgeons; aged 46; formerly on the staff of the Nathan Littauer Hospital, where he died, Dec. 30, 1929, of pneumonia.

Marguerite Julia Scholl, Los Angeles; Medical Department of the University of Southern California, Los Angeles, 1921; University of Minnesota Medical School, Minneapolis, 1927; member of the California Medical Association; aged 35; died, January 17.

Osmer Lionel Callahan, Mount Dora, Fla.; College of Medicine and Surgery (Physio Medical), Chicago, 1911; health officer of Mount Dora; aged 61; died, January 7, in a hospital at Orlando, of injuries received in an automobile accident.

Henry Michie Schneider ✠ Cincinnati; Ohio-Miami Medical College of the University of Cincinnati, 1910; on the staff and member of the board of directors of the Deaconess Hospital; aged 46; died in January, of cerebral hemiplegia.

John Alexander Lenfestey, Mount Clemens, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1893; formerly on the staff of St. Joseph's Hospital and Sanitarium; aged 59; died, Dec. 18, 1929, of heart disease.

Paul Emerson Reynolds, Baltimore; University of Maryland School of Medicine, Baltimore, 1919; on the staff of U. S. Veterans' Hospital 42, Perry Point; aged 34; was killed, January 27, in an automobile accident.

James Latham Tracy, Toledo, Ohio; Cincinnati College of Medicine and Surgery, 1877; Bellevue Hospital Medical College, New York, 1883; aged 79; died, January 15, of cirrhosis of the liver and arteriosclerosis.

Roscoe W. Payne, Franklin, Ind.; Bellevue Hospital Medical College, New York, 1896; member of the Indiana State Medical Association; aged 57; died, January 20, of Banti's disease and chronic myocarditis.

Nathaniel Mauson Read, Clarence, Mo. (licensed, Missouri, 1883); member of the Missouri State Medical Association; Civil War veteran; aged 91; died, January 14, of uremia and hypertrophy of the prostate.

Edmund E. Specht ✠ New York; Medical Department of the University of the City of New York, 1892; formerly on the staff of the Harlem Eye and Ear Hospital; aged 66; died in January of heart disease.

Daniel M. Dryden, Petersburg, Tenn.; University of Nashville Medical Department, 1874; member of the Tennessee State Medical Association; aged 82; died, January 15, in Fort Lauderdale, Fla., of heart disease.

Philip M. Strowbridge, Los Angeles; University of Nebraska College of Medicine, Omaha, 1929; aged 28; intern, Los Angeles County General Hospital, where he died, Nov. 25, 1929, of acute mastoiditis.

Robert Wiley Bounds, Prosper, Texas; Fort Worth School of Medicine, 1897; served during the World War; aged 62; died, Nov. 1, 1929, at the Baylor Hospital, Dallas, of heart disease and tuberculosis.

C. Francis S. Tate, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1895; member of the California Medical Association; aged 56; died in December, 1929, of heart disease.

Frederick Gibbons Mitchell, Sparks, Md.; University of Maryland School of Medicine, Baltimore, 1880; aged 74; died, January 11, at the Mercy Hospital, Baltimore, of cerebral hemorrhage.

Edward F. Martin, Corder, Mo.; Missouri Medical College, St. Louis, 1884; aged 72; died in January at the Research Hospital, Kansas City, as the result of a fall on an icy sidewalk.

Ozro E. Powers, Wallingford, Conn.; Yale University School of Medicine, New Haven, 1871; aged 83; died, Dec. 16, 1929, at the home of his niece in Meriden of heart disease.

Willis Albert Scott, Maquoketa, Iowa; State University of Iowa College of Medicine, Iowa City, 1889; aged 72; died, January 22, of arteriosclerosis and cerebral hemorrhage.

Clifford B. MacIntyre, New York; Columbia University College of Physicians and Surgeons, New York, 1905; aged 48; was found dead, January 14, of heart disease.

Frederick J. Schulz, Wyandotte, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1902; aged 51; died, January 24, of cerebral hemorrhage.

Daisy Isabelle Whittemore Rodenburg, New York; New York Medical College and Hospital for Women, 1902; aged 53; died, January 12, of cerebral hemorrhage.

Harrington Bennett Munroe, Los Angeles; McGill University Faculty of Medicine, Montreal, Que., Canada, 1903; aged 52; was drowned, Dec. 17, 1929.

Lyman Prentice McKeehan, Kansas City, Mo.; University of Kansas School of Medicine, 1907; aged 51; died, Dec. 10, 1929, at Fort Sam Houston, Texas, of chronic myocarditis.

Marion B. Patty, Chappell, Neb.; Keokuk (Iowa) Medical College, 1901; aged 58; died, Dec. 27, 1929, at Scottsdale, Ariz., of tuberculosis and diabetes mellitus.

John Rudolph Burger, Petersburg, Ind.; Jefferson Medical College of Philadelphia, 1895; aged 57; died suddenly, January 14, of carcinoma of the tongue.

Jasper N. Smith, Cuba Landing, Tenn.; Medical Department, University of Tennessee, Nashville, 1891; aged 60; died, Nov. 6, 1929, of diabetes mellitus.

Katherine S. Roebuck, Newport, Ky.; Presbyterian Hospital and Woman's Medical College, Cincinnati, 1894; aged 68; died, January 26, of nephritis.

Hiram A. Laws, Thompson Station, Tenn.; University of Nashville Medical Department, 1873; aged 79; died, Dec. 6, 1929, of organic heart disease.

Martha M. Waldron, Hampton, Va.; Woman's Medical College of Pennsylvania, Philadelphia, 1881; aged 79; died, January 3, of angina pectoris.

George Arthur Hill, Meriden, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1904; aged 59; died, Dec. 26, 1929, of heart disease.

Frank Abram Harrington, Buffalo; Harvard University Medical School, Boston, 1887; aged 74; died in December, 1929, of endocarditis and bronchitis.

Amos Ewing, Columbus, Ohio; Cleveland Medical College, 1869; Civil War veteran; aged 93; died, January 19, of hypernephroma of the left kidney.

Glenn Carl Harper ⊕ Durand, Wis.; Hahnemann Medical College and Hospital, Chicago, 1913; aged 44; died in December, 1929, of angina pectoris.

Allan Whitney Sylvester ⊕ Portland, Maine; Harvard University Medical School, Boston, 1924; aged 31; died, January 1, of sarcomatosis.

William Henry Hopkins, Norwood, Ohio; Miami Medical College, Cincinnati 1871; aged 80; died suddenly, Dec. 14, 1929, of cerebral hemorrhage.

William Henry Dwinelle, Tully, N. Y.; Bellevue Hospital Medical College, New York, 1881; aged 78; died, January 24, of pneumonia.

Jefferson Zachary Taylor, Baltimore; Jefferson Medical College of Philadelphia, 1875; aged 81; died, January 28, of heart disease.

Wilfred D. Robbins, Chicago Heights, Ill.; Chicago Medical College, 1884; aged 68; died, January 28, of heart disease and nephritis.

Jacob B. Norwood, Preston Hollow, N. Y.; Albany Medical College, 1868; aged 82; died, Dec. 25, 1929, of chronic myocarditis.

Frank W. Stewart, Milwaukee; Rush Medical College, Chicago, 1883; aged 77; died, Nov. 15, 1929, of heart disease.

Charles W. Goddard ⊕ Harvard, Ill.; Chicago Medical College, 1882; aged 72; died, January 16, of heart disease.

J. J. Rankin, Ottway, Tenn.; Kentucky School of Medicine, Louisville, 1876; aged 77; died, January 13, of pneumonia.

Thomas D. Love, Atlanta, Ga.; Atlanta Medical College, 1883; aged 68; died, Dec. 5, 1929, of cerebral hemorrhage.

Louise Downer Benzing, Buffalo; University of Buffalo School of Medicine, 1886; aged 71; died, Oct. 26, 1929.

Joseph B. Rick, Mishicot, Wis.; Rush Medical College, Chicago, 1888; aged 70; died, Nov. 22, 1929, of nephritis.

William A. Trobaugh, Cutler, Ind.; Medical College of Ohio, Cincinnati, 1880; aged 77; died, Dec. 27, 1929.

Horace W. Downing, Milan, Mich.; Michigan College of Medicine, Detroit, 1881; aged 72; died, Dec. 21, 1929.

Peryl Elkins Watts, South Jacksonville, Fla. (licensed, Florida, year unknown); aged 41; died in January.

Eugene B. Witte, New York; New York Homeopathic Medical College, 1885; aged 70; died, January 11.

Henry Gilbert, New York; Baltimore University School of Medicine, 1898; aged 54; died in December, 1929.

William F. Peeler, Lake City, Fla.; Reform Medical College, Macon, 1862; aged 87; died, Dec. 11, 1929.

Thomas Hill Maynard, Clare, Mich. (licensed, Michigan, 1901); aged 88; died, Dec. 5, 1929, of senility.

Edwin F. Stannus, Quincy, Ill.; Keokuk (Iowa) Medical College, 1905; aged 46; died, January 1.

Christina Kuntz, Berne, Ind. (licensed, Indiana, 1897); aged 68; died in January.

Bureau of Investigation

MISBRANDED PHARMACEUTICALS

Abstracts of Notices of Judgment Issued During 1929 by the Food, Drug, and Insecticide Administration of the United States Department of Agriculture

(Continued from last week)

During 1929 the Bureau of Investigation published under the title, "More Misbranded Nostrums," brief abstracts of Notices of Judgment issued by the Food, Drug, and Insecticide Administration of the United States Department of Agriculture. These have dealt with such proprietary medicines as had been found by government officials to be sold under claims that were false, misleading or fraudulent. During the same period there have been issued from the same source some Notices of Judgment against pharmaceutical products that were found to be adulterated or misbranded—or both—under the Food and Drugs Act. It should be noted that while these reports were issued by the government during 1929 the offenses charged were committed, in many instances, a year or more previously. A number of abstracts of these Notices of Judgment dealing with pharmaceutical products were printed last week, and a further instalment is given here:

Blaud's Modified Tablets.—The Pharmacal Products Company, Inc., of Easton, Md., shipped into New Jersey in November, 1926, a quantity of Blaud's modified tablets that were adulterated and misbranded. While these tablets were represented to contain 1/40 grain of arsenous acid, they were found to contain approximately 1/50 grain of this substance. In February, 1929, following a plea of nolo contendere, the company was found guilty and the court imposed a fine with costs.—[*Notice of Judgment 16399; Issued December, 1929.*]

Chloramine-T Tablets.—In December, 1927, and January, 1928, the Smith-Dorsey Company of Lincoln, Neb., shipped into the state of Missouri a quantity of chloramine-T tablets that were adulterated and misbranded. Each tablet was represented to contain 4.6 grains of chloramine-T when, as a matter of fact, this product contained only 1/40 grain of chloramine-T. In March, 1929, a plea of guilty was entered and a fine, with costs, imposed.—[*Notice of Judgment 16395; Issued December, 1929.*]

Creosote Compound Mixture.—Charles Killgore of New York City shipped in January, 1929, into Connecticut a quantity of "Mistura Creosote Compound" which was declared misbranded. When analyzed by the federal chemists it was found to consist essentially of creosote, alcohol (27.7 per cent), sugar and water. It was declared misbranded because false and fraudulent therapeutic claims were made for it. In April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16398; Issued December, 1929.*]

Sirup of Ipecac.—In September, 1927, William R. Warner and Company, Inc., New York City, shipped to New Jersey a quantity of sirup of ipecac which was declared adulterated and misbranded. Analysis showed that the product did not conform to the tests laid down in the Tenth Revision of the United States Pharmacopeia. In May, 1929, a plea of guilty was entered on behalf of the company and a fine imposed.—[*Notice of Judgment 16373; Issued November, 1929.*]

Tincture of Belladonna Leaves.—Frank G. Scott, Detroit, Mich., shipped in December, 1925, to Illinois a quantity of tincture of belladonna leaves that was declared adulterated and misbranded. Analysis showed that the product yielded not more than 0.0192 gram of the total alkaloids of belladonna per 100 cc., when it was labeled "Tinct. Belladonna Leaves, U. S. P. Standard 0.03% Mydriatic Alkaloids." In November, 1927, the defendant pleaded guilty and was fined.—[*Notice of Judgment 15912; Issued May, 1929.*]

Hyoscyamus (Henbane Leaves).—McIlvaine Bros., Inc., of New York City shipped one bale of henbane leaves from that place to Baltimore in February, 1928, which government officials declared was adulterated. Analysis of a sample by federal chemists showed that it yielded 19.15 per cent of acid-insoluble ash when the Pharmacopeia requires that it shall yield not more than 12 per cent. In April, 1928, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 15907; Issued May, 1929.*]

Calomel Tablets.—Frank G. Scott, Detroit, Mich., shipped in December, 1925, into Illinois a quantity of calomel tablets labeled "Calomel Aromatic—Each Tablet represents ¼ grain." On analysis these tablets were found to contain not more than ⅕ grain of calomel per tablet and were thus declared adulterated and misbranded. In November, 1927, the defendant pleaded guilty and was fined.—[*Notice of Judgment 15912; Issued May, 1929.*]

Calomel and Phenolphthalein Tablets.—The Pharmacal Products Company, Inc., of Easton, Md., shipped in November, 1926, into New Jersey a quantity of calomel and phenolphthalein tablets that were adulterated and misbranded. These tablets were represented to contain 1/10 grain of calomel and 1/10 grain of phenolphthalein each, whereas they were found to contain 1/13 grain of calomel and 1/12 grain of phenolphthalein each. In February, 1929, following a plea of nolo contendere, the company was found guilty and the court imposed a fine with costs.—[*Notice of Judgment 16399; Issued December, 1929.*]

Sodium Bicarbonate.—James Good, Inc., Philadelphia, shipped to Maryland in September, 1928, a quantity of a product labeled "Sodium Bicarbonate U. S. P." The shipment was declared misbranded in that analysis on the part of the federal chemists showed that some of the cans contained sodium fluoride to the extent of 86 to 92 per cent. In March, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16274; Issued October, 1929.*]

Morphine Sulphate Tablets.—Frank G. Scott, Detroit, Mich., shipped in December, 1925, into Illinois a quantity of tablets labeled "Morphine Sulphate ½ Grain." Analysis showed that they actually contained not more than ⅖ grain of morphine sulphate to the tablet and were, therefore, declared adulterated and misbranded. In November, 1927, the defendant pleaded guilty and was fined.—[*Notice of Judgment 15912; Issued May, 1929.*]

Morphine and Atropine Tablets.—The Smith-Dorsey Company of Lincoln, Neb., shipped in December, 1927, and January, 1928, into Missouri some morphine and atropine tablets that were adulterated and misbranded. While the tablets were labeled as containing ¼ grain of morphine and 1/150 grain of atropine, they were found to contain no morphine whatever. In March, 1929, a plea of guilty was entered and the court imposed a fine with costs.—[*Notice of Judgment 16395; Issued December, 1929.*]

Codeine Sulphate Tablets.—In December, 1925, Frank G. Scott, Detroit, Mich., shipped into Illinois a quantity of codeine sulphate tablets that were adulterated and misbranded. The product was labeled as containing 1 grain of codeine sulphate to the tablet while analysis showed that they contained not more than ¾ grain of that drug. In November, 1927, the defendant pleaded guilty and was fined.—[*Notice of Judgment 15912; Issued May, 1929.*]

Aletris (Unicorn Root).—Sig Wallace, Statesville, N. C., shipped in 1928 a quantity of unicorn root to Indianapolis that was declared adulterated. Analysis of a sample showed that it yielded approximately 30 per cent of acid-insoluble ash, while the National Formulary provides that aletris (unicorn root) shall yield not more than 10 per cent of the ash. In October, 1928, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16076; Issued July, 1929.*]

Rheumatism Tablets.—P. H. Mallen Company, Chicago, shipped in July, 1926, into Michigan a quantity of rheumatism tablets which were declared adulterated and misbranded. Each tablet was represented to contain 3 grains of lithium salicylate whereas they contained no lithium salicylate. A plea of guilty was entered in May, 1929, and a fine, with costs, was imposed by the court.—[*Notice of Judgment 16389; Issued December, 1929.*]

Spigelia (Pink Root).—R. Hillier's Son Company, Inc., of Jersey City, N. J., shipped in February, 1927, into Maryland a quantity of pink root, which was adulterated and misbranded. The article was labeled in part "Ground No. 20 True Pink Root" and was adulterated in that while it was represented to be true pink root, it was a product that consisted, in large part, of soil. In December, 1928, a plea of guilty was entered and the court imposed a fine of $100.—[*Notice of Judgment 16174; Issued August, 1929.*]

Cinchophen Tablets.—The Pharmacal Products Company, Inc., of Easton, Md., shipped in September, 1926, into Pennsylvania a quantity of phenylcinchoninic acid (cinchophen) tablets that were adulterated and misbranded. While the tablets were represented to contain 7½ grains of cinchophen, they actually contained only 6⅜ grains. In February, 1929, following a plea of nolo contendere, the company was found guilty and a fine with costs imposed.—[*Notice of Judgment 16399; Issued December, 1929.*]

Citrated Magnesia.—Max W. Robinson, trading as the New England Magnesia Company, Boston, Mass., shipped to Rhode Island in July, 1927, a quantity of citrated magnesia which was declared adulterated and misbranded. Analysis showed the product to contain magnesium citrate corresponding to 1.44 grams of magnesium oxide per 100 cc., whereas the Pharmacopeia provides that it should contain magnesium citrate corresponding to 1.5 grams of magnesium oxide per 100 cc. In December, 1928, the defendant pleaded guilty and was fined $200.—[*Notice of Judgment 16137; Issued July, 1929.*]

Acetphenetidin Tablets.—The Pharmacal Products Company, Inc., Easton, Md., shipped in January, 1927, into the state of New York a quantity of acetphenetidin tablets that were adulterated and misbranded. While the tablets were represented each to contain 1 grain of acetphenetidin, they actually contained less than 9/10 grain. In February, 1929, following a plea of nolo contendere, the court found the company guilty and imposed a fine with costs.—[*Notice of Judgment 16399; Issued December, 1929.*]

Tincture of Aconite.—The Pharmacal Products Company, Inc., Easton, Md., shipped in September, 1926, into Pennsylvania a quantity of tincture of aconite that was adulterated and misbranded. The preparation was labeled "Tincture of Aconite U. S. P." but it was found on investigation that it fell far below the pharmacopeial standards of strength. In February, 1929, following a plea of nolo contendere, the company was found guilty and a fine with costs imposed.—[*Notice of Judgment 16399; Issued December, 1929.*]

Tincture of Iodine.—George A. Breon and Company of Kansas City, Mo., shipped in November, 1927, from Missouri to Iowa a quantity of a product labeled "Tincture of Iodine, U. S. P." The government heid that the product was adulterated and misbranded in that analysis showed it to contain only 3.6 grams of iodine in each 100 cc., when the Pharmacopeia prescribes not less than 6.5 grams per 100 cc. In March, 1928, the Fort Dodge Serum Company, Fort Dodge, Iowa, having withdrawn a motion and answer previously made, a motion was filed with approved statutory form of bond for release of the drugs, and the court ordered that the bond be approved and the drugs released.—[*Notice of Judgment 15821; Issued April, 1929.*]

Citrated Magnesia.—The Philadelphia Magnesia Company, a trade name for Michael Meisel, Benjamin Mones and Lewis J. Mones, copartners, shipped from Philadelphia into New Jersey in February, 1928, a quantity of citrated magnesia which

was declared adulterated and misbranded. The product was found to vary from the standard of strength, quality and purity laid down by the United States Pharmacopeia. In June, 1929, following a plea of nolo contendere, the concern was found guilty and the court imposed a fine of $50.—[*Notice of Judgment 16402; Issued December, 1929.*]

Correspondence

"BACTERIAL AUTO-AGGRESSINS"

To the Editor:—The editorial comment on bacterial auto-aggressins (THE JOURNAL, January 25, p. 269) contains statements which create impressions that may be challenged.

"The metaphor that the lytic principle responsible for the d'Herelle phenomenon is a living . . . virus . . . parasitic on bacteria has been *popularly* mistaken as proof of the existence of a new submicroscopic order of inframicrobic life" is the first statement made. Bacteriophage can scarcely be considered a matter of common knowledge. Much less has the average layman (or physician either) information concerning or interest in the nature of bacteriophage. Further, among those to whom bacteriophage is a vital subject the virus concept is anything but popular. Again, the term popular occurs in referring to the fact that the autolytic nature of the bacteriophage has escaped popular attention. This statement, however, is true, my only criticism being that it is not surprising since any theory of the nature of the bacteriophage has suffered a similar fate. Still further we find "Unless the popular mind. . . ." Since when have scientists been so greatly concerned about the popular mind, especially when a problem so complex as the nature of bacteriophage is concerned?

The statements mentioned are not so misleading as the statement that the autolytic concept is apparently confirmed by the work of Krueger and Tamada. While these investigators have introduced a new and better method for bacteriophage study they are not the first to contend that bacteriophage must approach the size of the protein molecule. The popular mind might indeed find it difficult to endow a single protein molecule with the properties of life; the scientific mind should not have these limitations. The argument has often been advanced by d'Herelle and remains valid that if we accept certain conditions as criteria of life and if a certain substance meets these criteria, it must be considered as living. The difficulty so far as bacteriophage is concerned seems to be in proving with certainty that this principle possesses these attributes. So it would seem that the rational interpretation of the work of Krueger and Tamada, which, incidentally, is in itself a valuable contribution to the study of bacteriophage, should be concerned with the question of what may be the necessary structure of matter permitting the existence of the phenomenon of life.

While not an extreme advocate of d'Herelle's hypothesis, I cannot help but recognize that it is the only one not refuted by the facts. The theories of Hadley and in particular of Bronfenbrenner have much to recommend them and I confess a preference for the views expressed by the latter. Nevertheless, no theory except d'Herelle's has as yet been advanced which is not open to serious criticism because it has failed to agree with the facts in one or another particular. This is not true of d'Herelle's hypothesis, and Hadley, while admitting certain weaknesses in his own theory, was forced to state that the only objection to d'Herelle's claims lay in the realm of general improbability. While such an attitude should inspire the scientist to investigation of the factors on which the improbability rests, it should not lead him to reject the theory until he can provide another not having such inherent faults. This remains to be done.

Finally, I can see little reason why the "bacteriophage metaphor" should be laid aside in the interests of nonprofessional clarity. I take it that the writer is particularly concerned with that "nonprofessional" element to be found in the commercial biologic laboratory, for he mentions commercial exploitation as a bogy to be exorcised by the substitution of esoteric terms. One of the remarkable things about bacteriophage is the extent to which commercial production has been avoided. After more than ten years of investigation, only one commercial laboratory is producing bacteriophage, and that one seems conservative in its claims and methods.

The tenor of the entire comment gives one the impression that the writer sought to read into this single piece of research a significance which it can scarcely be said to contain. As a contribution to our knowledge of bacteriophage it has much value, but it is doubtful whether it has such far reaching consequences as the writer would have us believe.

N. W. LARKUM, Lansing, Mich.
Immunologist, Michigan Department of Health.

[COMMENT.—During recent years, newspapers and popular scientific periodicals have contained numerous items dealing with "bacteriophage." In these items it is always presented as a scientifically demonstrated inframicrobic vital unit. More than one botanist and zoologist has lectured to his students on this marvelous submicrobic "parasite." Several laboratories have attempted to "sell" this new therapeutic "bacteria-eater" to the medical profession. The editorial comment, therefore, purposely overemphasized the fact that the picturesque vital unit hypothesis of current "sales talk" is still unproved, and is unacceptable to many immunologists.

The d'Herelle hypothesis that the transmissible bacterial lysin of Twort is a living, self-propagating, ultramicroscopic, subvirus, actively parasitic on bacteria, has served the useful purpose of dramatizing lytic phenomena and of stimulating interest in many fields of fundamental clinical and nonclinical research. A logical extension of the d'Herelle "metaphor," however, might lead an enthusiast to picture pepsin as an active parasite on the protein molecule, to consider hemolytic amboceptor as an "erythrophage," to postulate the diagnostic factor in syphilitic serum as an "eater-of-complement," and tetanus toxin as a "neurophage." The burden of proof, however, would fall on any one incautious enough to suggest such a nomenclature.

Immunology still awaits convincing experimental evidence that the d'Herelle interpretation of the Twort-phenomenon is justifiable.—ED.]

DISTRICT OF COLUMBIA BASIC SCIENCE BOARD

To the Editor:—THE JOURNAL, January 18, page 193, is only partly correct when it says the applicants for the issuance of licenses to practice medicine in the District of Columbia, asking exemption from examination because of licenses issued by the State Medical Board of Ohio after examination, are required to pass an examination before the District of Columbia Basic Science Board. Such examinations are made necessary now only by absence of evidence showing that the examinations in anatomy, physiology, chemistry, bacteriology and pathology given by the Ohio State Board of Medical Examiners are as rigid as are the corresponding examinations given by the District of Columbia Basic Science Board. When the State Medical Board of Ohio furnishes satisfactory evidence to show that its examinations are as rigid as the basic science examinations in the District of Columbia, the basic science board of the district can exempt Ohio licentiates from the basic science examinations.

The basic science section of the Healing Arts Practice Act, District of Columbia, approved, Feb. 27, 1929, contains liberal provisions for reciprocity, not only with any state basic science board but also with any state medical examining board. The basic science provisions of the district constitute the first line of defense of the public against ignorance and quackery in the healing arts, and they have already demonstrated their value.

W. C. FOWLER, M.D., Washington, D. C.
Secretary-Treasurer, Commission on Licensure.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ACUTE LYMPHATIC LEUKEMIA

To the Editor:—A girl, aged 15 years, fell sick about two weeks ago with general malaise, slight fever, headache and nausea. A few days later she developed a mild jaundice of the sclerae and skin with a mild itching and a few small petechiae on the skin of the arms. The gallbladder seemed distended and tender on palpation. The liver and spleen were palpable. The urine contained bile pigments, and the feces were acholic. Her temperature, which is still ranging between 99 and 99.05 F., has never been higher than 101. Her general condition has been fairly good, without drowsiness or torpor. Her appetite is good. She had no hemorrhages from the nose or the bowels. The menses are regular. The icterus is now deeper, the feces are normal and the urine is clear; it still contains bile pigments but no blood or albumin. The hemoglobin is 45, the red blood cells 5,000,000, the white blood cells 328,000, with lymphocytes 98 per cent. There are no reticulocytes and no abnormalities of the red blood cells. The blood fragility test was normal. The spleen is now enlarged almost to the umbilical lines, the liver is palpable, and a few lymph nodes at both sides of the neck are slightly enlarged. Does this case fit in the picture of acute lymphatic leukemia? The family history is entirely negative. The patient was never sick before. She is well developed for her age. Admitting the diagnosis of acute lymphatic leukemia, what would be the best treatment? Would blood transfusion be indicated? How helpful would it be? Would radium or roentgen treatment change the course of the disease if not the prognosis? [A communication five days later stated that blood examination of the patient indicated definitely that the case was one of acute lymphatic leukemia.]

ARALDO SERRI, M.D., Brooklyn, N. Y.

ANSWER.—The picture is that of an acute lymphatic leukemia. There is no treatment which shows certain beneficial effects. Roentgen rays or radium may reduce the size of the spleen or the glands but will not influence the course. Benzene, even if it should decrease the white count, will not be of benefit and may do harm. Transfusion, for the associated anemia, will be of only temporary benefit at best. Nothing is known that will change the prognosis.

UDGA STOMACH TREATMENT

To the Editor:—Please tell me the formula of Udga, manufactured by the Udga Medicine Company of St. Paul.

B. C. B., Ohio.

ANSWER.—The formula of Udga is, apparently, secret—at least none of the voluminous advertising matter and follow-up letters that we have on file give it. The Udga Medicine Company, which puts out this preparation, was formerly known as the Phungen Laboratories. The preparation is advertised as a mail-order treatment for stomach ulcer, gastritis and dyspepsia. Our readers may remember a similar product, known as Pfunder's Stomach Tablets, sold from Minneapolis and dealt with in THE JOURNAL, Dec. 1, 1928. Because of the similarity in name ("Phungen" and "Pfunder"), a still greater similarity in the appearance of the product, the contiguity of the concerns that put them out, and the fundamental fact that both preparations are advertised as remedies for stomach ulcer, the A. M. A. Chemical Laboratory was asked to make some qualitative tests to determine whether or not the same ingredients that were found in the Pfunder Stomach Tablets were to be found in the Udga Stomach Treatment. The Laboratory reports that the tests indicated the presence of bismuth, magnesium, sodium, nitrates, carbon dioxide and starch. It seems quite likely, therefore, that the preparation is similar in composition to the Pfunder Stomach Tablets, which were found to contain bismuth subnitrate about 30 per cent, magnesium oxide about 22 per cent, and sodium carbonate about 24 per cent.

INJECTIONS OF QUININE INTO VEINS DURING MENSTRUATION

To the Editor:—What disturbing effect might an injection of quinine hydrochloride and urethane into a varicose vein have on menstruation, if used during or one or two days prior to onset of the flow? Kindly omit name.

M.D., Massachusetts.

ANSWER.—The effect of quinine on menstruation is uncertain. Its continuous administration has been blamed for menorrhagia, and it has been advocated as a remedy for metrorrhagia. Possibly it may have both these effects, for it may produce, or probably reinforce, a hemorrhagic dyscrasia; and it tends to cause contractions of the uterine muscle which may diminish uterine bleeding. It may be well, therefore, to apply to quinine the general rule of avoiding during menstruation the giving of possibly disturbing remedies, unless their administration at this time is imperatively indicated.

COMBINATIONS IN PRESCRIPTION OF BARBITAL AND AMIDOPYRINE

To the Editor:—Referring to Queries and Minor Notes (THE JOURNAL, Aug. 31, 1929, p. 713) on the "Use of Combination of Barbital and Amidopyrine," I should like to know whether phenobarbital, acetylsalicylic acid and amidopyrine can be combined satisfactorily in capsule, in tablet or in solution. If in solution, kindly advise a suitable menstruum, one that would be mild and not irritating, say, to the throat after tonsillectomy. I have used with much satisfaction morphine sulphate, 1/32 grain (2 mg.) to the half teaspoonful of an elixir or mild vehicle, one-half teaspoonful at three to four hour intervals, if needed. I should like to get away from the use of morphine entirely if possible. The medicament would have to be in solution and in a small quantity of liquid for tonsil cases.

J. B. H. WARING, M.D., Cincinnati.

ANSWER.—Phenobarbital is best prescribed in solid dosage form, as phenobarbital sodium (in fact, any sodium salt of a barbital derivative) slowly breaks down in solution, yielding an inert substance. Acetylsalicylic acid or its salts is likewise decomposed in the presence of water. Such combinations should best be prescribed in capsule, tablet or powder form. If a solution is required, the following prescription may yield a satisfactory result:

		Gm. or Cc.
℞	Codeine phosphate	0.15
	Amidopyrine	1.50
	Elixir of Glycyrrhiza, to make	60.00

M. Label: Teaspoonful in a little water every half hour as required or until four doses have been taken; then every two to four hours as needed.

Ethyl aminobenzoate, in the same dose as the codeine phosphate, might possibly be added to advantage as it might have some local anesthetic value, if the solution is kept in the mouth and throat for some time before swallowing.

POSSIBLE NEPHRITIS AFTER PHENOBARBITAL OR SOLUBLE BARBITAL

To the Editor:—I have been using phenobarbital sodium and soluble barbital for patients who are demented or insane, and I have had good results. Does this combination cause nephritis in this class of patients? A physician who has an institution for addicts says that this does take place. Do you know whether this is so? Kindly omit name.

M.D., Louisiana.

ANSWER.—While phenobarbital does not appear in the urine even in poisoning, barbital does to the extent of about 63 per cent of the ingested barbital. Kidney changes have been described in acute barbital poisoning; and it is known that addicts are less resistant, so that small doses are more dangerous to them than to normal persons. The observation of the physician in the institution for addicts is therefore probably correct. Nevertheless, the danger of nephritis is not sufficiently great, under other circumstances, to interfere with the therapeutic use of these agents.

FUNGOUS INFECTION OF DAMAGED SKIN

To the Editor:—A painter, aged 50, consulted me regarding an eczematous involvement of the dorsum of all the fingers of both hands. For the last thirty years he has been using "Walcote Sanitary Kalsomine." He used to stir it in a pail with his bare hands. Last January he first noticed the trouble. The skin over the dorsum of all fingers becomes brittle, causing cracks and fissures. Soon the skin peels off entirely, leaving a bright red somewhat moistened surface that itches constantly. If he puts on gloves and avoids water, the hands heal up in about a fortnight; but as soon as he removes the gloves, the newly formed skin, thin as tissue paper, peels off, leaving a ragged red base. He avoided touching Kalsomine since last February. He has consulted many physicians, of whom every one tried one thing or the other without any success. His general health seems to be unimpaired. It is surprising that the volar surface of the hands is entirely uninvolved. I am enclosing a folder giving some information regarding Kalsomine. Of course, it might be that Kalsomine is not to be blamed here. I thought perhaps you had more information regarding this condition. What in your opinion would be the proper treatment? Kindly omit my name.

M.D., Iowa.

ANSWER.—Approximately four times out of five, dermatoses of the kind described in this query are caused by fungi. Scrapings from the affected skin, properly prepared for microscopic examination, will ordinarily present fungous parts, such as spores, mycelial threads and sporangia. These infections are resistant to treatment and treacherous in that recurrences follow apparently complete healing.

These conditions are of common occurrence among workmen who are exposed to low grade skin irritants. Painters, wall paperers, whitewashers, floor scrubbers and butchers may be cited as examples of the tradesmen prone to develop this form of skin disease.

In the case of water paints as noted in the query, work is the indirect rather than the direct causative factor. Water

paints contain some or all the following: whiting (calcium carbonate), gypsum (calcium sulphate), calcium oxide, animal glue, casein, alum and pigments. The greater number of these substances are not direct skin irritants to the extent that immediate harm is produced. Long continued exposure gradually renders the skin susceptible to the entry of fungi, and infection follows. Some process akin to sensitization takes place, so that a recurrence frequently follows every exposure.

In the treatment of this condition the x-rays have proved helpful. In acute stages, wet dressings with aluminum acetate will prove efficacious. In the absence of repeated exposures, almost any bland treatment will suffice. Immediate recurrences on reexposure undo the good results of treatment and often necessitate a complete change of occupation.

TREATMENT OF SYPHILIS

To the Editor:—I am treating a patient with secondary syphilis. After a course of neoarsphenamine (ten injections, from 0.6 to 0.9 Gm.) once weekly, I was disappointed to find his Wassermann reaction still 4+. It is my intention to give him 0.6 Gm. of neoarsphenamine and 100 mg. of potassium bismuth tartrate once weekly after a rest period of one month. Do you consider this good treatment? If not, any suggestions you may make will be appreciated. Kindly give exact names and dosages to be used as well as length intervals between doses and courses. If this question is printed, please omit name.

M.D., Michigan.

Answer.—It is not unusual to find the positive Wassermann reaction unchanged by a single course of neoarsphenamine. The management of a case of secondary syphilis varies greatly with individual syphilologists, but it is considered best to supplement the arsenical by either mercury or bismuth or by both. One plan of treatment that is effective combines weekly intravenous injections of from 0.45 to 0.6 gm. of neoarsphenamine with weekly intramuscular injections of either mercury or bismuth, given for eight or ten weeks to each course. At least three consecutive courses should be given with a rest period of from one to two months between courses. The blood should be examined for the Wassermann reaction at the end of the rest period. It is well to alternate mercury and bismuth, using one drug for one course and the other for the following.

TREATMENT OF PAPILLOMA OF OVARY WITH ASCITES

To the Editor:—Can you give me any information relative to the treatment of carcinomatous papilloma of the ovary associated with ascites, by the administration of the ascitic fluid? The patient is 36 years of age; laparotomy sixteen months ago revealed a malignant papilloma of the right ovary. The tumor now reaches the liver on the right side and across to the left lower quadrant. Tapping is necessary every five to seven days. From 3 to 3½ gallons of bloody fluid is obtained each time. The patient has gained weight in the last six months. Please advise me as to autogenous treatment, if any, and prognosis.

CYRUS D. CANTRELL, M.D., Kansas City, Mo.

ANSWER.—The administration of ascitic fluid in the treatment of carcinomatous papilloma of the ovary has not yielded encouraging results. The prognosis in cases such as the one cited is bad. Occasionally, however, a papillomatous growth of the ovary may appear malignant both macroscopically and microscopically but subsequent events prove the growth to be benign.

USE OF ETHYLHYDROCUPREINE AFTER EYE INJURY

To the Editor:—Would it be considered good practice to use ethylhydrocupreine in all corneal injuries at the first treatment if the injury was caused by stone, twig, coal or chips of wood which are said to be frequently followed by pneumococcus infection and possible ulcus serpens? Would the reaction to the ethylhydrocupreine be such as to delay or interfere with healing, provided pneumococci had not been present? Is the substance best used as an unguent, oil or aqueous solution and what strength is proper to use as a prophylactic or in treatment? As a prophylactic would one treatment be considered sufficient? Please omit name and address.

M.D., Wisconsin.

ANSWER.—The use of ethylhydrocupreine following any corneal injury is considered good practice with the proviso that not too much reliance be placed on the prophylactic possibilities. The pneumococcus is the predominant organism in serpiginous ulcers, but equally dangerous ulcers may result from the infection of the cornea with other organisms. Ethylhydrocupreine has a low bactericidal index for organisms other than the pneumococcus. The slight hyperemia and reaction following the use of ethylhydrocupreine, whether infection is present or not, has no influence on the regenerative power of the corneal epithelium. The substance is best used in 1 per cent aqueous solution and must be fairly fresh, that is, not over ten days old; this applies to prophylactic as well as therapeutic use. Although one treatment might suffice, the solution should be used every two or three hours, if danger of infection is present. However, a much safer prophylactic agent would be a more universal bactericidal drug.

REMOVAL OF "WHISKY" BREATH

To the Editor:—Please let me know the best method of eliminating or lessening the odor of whisky on one's breath after drinking. Please omit name.

M.D., South Carolina.

ANSWER.—Chewing cardamom seed is a favorite method, though probably any other strong aromatic, such as cinnamon or cloves, would do as well. The various "breath perfumes" are merely mixtures of aromatics commonly incorporated in a licorice base.

ETIOLOGY OF SLOW PULSE RATE

To the Editor:—In the case of a man, aged 45, who appears to have a typical cardiac neurosis of three years' duration, the pulse rate is occasionally as low as 48; the rhythm is regular and there is no pulse deficit. Would this alone, with no other signs of heart abnormality, throw any serious doubt on the diagnosis? Are spells of slow pulse common or uncommon in cardiac neuroses? Please omit name.

M.D., New Hampshire.

ANSWER.—Cardiac neurosis is not a well chosen term to describe any condition of the heart and is better not used.

A pulse of 48 may be a normal pulse rate, and due to normal physiologic conditions. The rate alone would throw no doubt on the diagnosis. A complete block would show a slow regular rhythm but would not change on exertion. A partial block with a 2:1 rhythm would show only a slight change on exertion. If the auricular rate rose from 96 to 120, the ventricular rate and the pulse would rise only from 48 to 60. It would be improbable.

Such a slow pulse is of moderate frequency in normal persons. A complete block should be ruled out and the possibility of some source of vagus stimulation should be investigated.

PSYLLIUM OR FLAXSEED FOR CONSTIPATION

To the Editor:—Is there any advantage in using psyllium seed over flaxseed in constipation? Please omit my name.

M.D., Nebraska.

ANSWER.—The chief advantage of psyllium over flaxseed is that the former is free from odor and taste while the latter has a slight but distinct, though not unpleasant, flavor of flaxseed oil.

HIGH BLOOD PRESSURE AND ARTERIOSCLEROSIS

To the Editor:—Please differentiate the diagnosis of high blood pressure and of arteriosclerosis in the columns of THE JOURNAL.

F. A. NORTHRUP, M.D., Pierre, S. D.

ANSWER.—Arteriosclerosis is an anatomic condition of the arteries, with characteristic structural changes resulting in a loss of elasticity of the arterial wall.

High blood pressure is a physiologic condition resulting from the heart forcing an increased minute-volume of blood into normal arteries, or an increased or normal or less than normal unit-volume into arteries contracted because of vasomotor changes or because of anatomic changes causing constriction or loss of elasticity.

High blood pressure and arteriosclerosis may be associated, or there may be arteriosclerosis with normal blood pressure, or high blood pressure with arteries anatomically normal for the age.

DIFFERENCE IN BLOOD PRESSURE ON RIGHT AND LEFT SIDES

To the Editor:—A man, aged 50, has a systolic blood pressure of 250 on his right arm and 150 on his left arm. These figures are fairly constant. Chest examination and confirmatory chest roentgenograms taken anteroposteriorly and laterally are negative. Can you suggest an explanation for this difference other than a localized vasomotor disturbance?

NATHANIEL HURWITZ, M.D., Philadelphia.

ANSWER.—Frequently a satisfactory explanation cannot be found for cases exhibiting such a difference in pressure. A double aorta may cause such a picture, the left subclavian coming off the anterior and smaller arch, just before the two reunite above the ductus arteriosus. The esophagus lies between the two, and barium will show it in front of the larger arch. The condition may not show in a plate, or fluoroscopically without the barium. It is a rare condition. A hypoplasia of the aorta, involving the arch, is a possibility. Whether such a picture is congenital or acquired is not certain. Plaques of the

aorta will have been mentioned as a cause, especially when they are associated with proliferative changes. An aneurysm of the arch may escape detection with the most careful roentgen examination. One such case was due to a dissecting aneurysm, showing no enlargement on roentgen examination and found only at necropsy.

SYMPTOMS FOLLOWING THYROIDECTOMY

To the Editor:—Is there any treatment to relieve a woman who was operated on for exophthalmic goiter about two years ago and was greatly improved until lately, when the tachycardia and dyspnea have been so severe at times that she feels much discouraged? I have not been able to encourage her as to a favorable prognosis and an ultimate recovery.

JAMES D. KENNEDY, M.D., Toadlena, N. M.

ANSWER.—Hyperthyroidism (exophthalmic goiter) frequently recurs after medical treatment and also, though less frequently, after surgical treatment. In the present case the tachycardia and dyspnea may be due to a recurrence of the hyperthyroidism, or conceivably to failing heart independent of thyroid disturbance. Other symptoms, including nervous phenomena, loss of weight, sleeplessness, increased basal metabolism, a history of overexertion and other general causes of heart strain will help to determine the cause of the present relapse. In case the present tachycardia and dyspnea are due to hyperthyroidism, relative rest or rest in bed, iodides such as sodium iodide or compound solution of iodine, or digitalis, as in other cases of heart weakness, may be employed. Dyspnea and tachycardia due primarily to the heart call for rest in bed, digitalis, regulation of the bowels and perhaps some restriction of fluids. It is assumed that other causes of disease of the chest have been excluded.

DANGER OF INFECTING WIFE AND CHILD WITH SYPHILIS

To the Editor:—Kindly give me some information on the possibility of infection to others in cases of syphilis, with especial regard to the following points, considering the usual case of a man in whom treatment is begun in the primary stage soon after the Wassermann reaction has become positive and this treatment is continued over a period of perhaps two years, the Wassermann reaction having become negative after a few months and remained so, and no symptoms or lesions having occurred after the primary stage. His wife is not infected. 1. How soon may this man have intercourse with his wife by condom? 2. How soon may this man have intercourse with his wife without condom? 3. How soon may this man be assured that he may safely have children without fear of the child being syphilitic? 4. Is it possible for a man with syphilis to infect his child with syphilis, except through the medium of first infecting his wife and the mother in turn infecting the fetus in utero? Please use initials only.

M.D., Wisconsin.

ANSWER.—Questions 1, 2 and 3 cannot be answered dogmatically. In most cases intensive antisyphilitic treatment in the primary seropositive stages continued for from one to two years is sufficient to render the patient incapable of giving the disease to others or of transmitting it to his offspring. About forty years ago, Fournier stated that it was permissible for syphilitic patients to marry after three years of treatment with mercury and iodides, if no lesions had appeared for two years afterward. With modern therapy this time interval may be reduced. If the Wassermann reaction remains negative for two years after an adequate course of treatment, and with negative cerebrospinal fluid and absence of clinical symptoms, it is probably safe for the patient to marry. It would be advisable, however, to repeat the blood examination at yearly intervals and that of the cerebrospinal fluid at longer intervals so as to guard against a relapse which might again make the patient infectious. It might also be safer to wait a few years before having children.

The general consensus seems to be that whenever a syphilitic father has a syphilitic child the mother also is infected. Prenatal infection is generally held to be placental in origin. Hochsinger, Wile and others have presented arguments in favor of the paternal transmission of syphilis and of the fetal infection of the placenta.

GENTIAN VIOLET IN SOLUTION OR OINTMENT

To the Editor:—I have had good results in treating impetigo with solutions of gentian violet and have extemporized an ointment containing it. Could you tell me the best strength and the most suitable base for such an ointment, so that part of the gentian violet would be in solution?

ROBERT W. BELKNAP, M.D., Damariscotta, Me.

ANSWER.—There is no doubt that gentian violet is of value in the treatment of certain types of skin lesion. It seems likely, however, to be much more effective in solution painted on the skin than in ointments. For this reason, some specialists do not advocate its use in ointments.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 4, 1930. Sec., Dr. Harry C. DeVighne, Juneau, Alaska.

MAINE: Portland, March 11-12, 1930. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland, Me.

MASSACHUSETTS: Boston, March 11-13, 1930. Sec., Dr. Frank M. Vaughan, 144 State House, Boston, Mass.

NEW HAMPSHIRE: Concord, March 13-14, 1930. Sec., Dr. Charles Duncan, Concord, N. H.

OKLAHOMA: Oklahoma City, March 11-12, 1930. Sec., Dr. J. M. Byrum, Shawnee, Okla.

PORTO RICO: San Juan, March 4, 1930. Sec., Dr. Diego A. Biascoechea, 3 Allen St., San Juan, P. R.

WISCONSIN: Madison, March 22, 1930. BASIC SCIENCE. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

Idaho October Examination

Hon. F. E. Lukens, commissioner of law enforcement of the Medical Examining Board of Idaho, reports the written examination held at Boise, Oct. 1, 1929. The examination covered 13 subjects and included 130 questions. An average of 75 per cent was required to pass. Four candidates were examined, 3 of whom passed and 1 failed. Eight physicians were licensed by the endorsement of their credentials. The following colleges were represented:

PASSED	Year Grad.	Per Cent
Rush Medical College	(1929)	89
Creighton University School of Medicine	(1927)	76
University of Nebraska College of Medicine	(1928)	75

FAILED	Year Grad.	Per Cent
Rush Medical College	(1929)	72

ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
Loyola University School of Medicine	(1918)	Illinois
Rush Medical College	(1912)	Utah
University of Kansas School of Medicine	(1907)	Kansas
Washington University Medical College	(1924)	Missouri
University of Oregon Medical College	(1926) Oregon, (1927)	N. B. M. Ex.
Jefferson Medical College	(1906) New York, (1927)	California

Michigan Reciprocity Report for 1929

Dr. F. C. Warnshuis, secretary of the Board of Registration in Medicine of the State of Michigan, reports that 95 physicians were licensed through reciprocity for the year 1929. The following colleges were represented:

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington Univ. Med. Sch.	(1899), (1920), (1921)	Dist. Colum.
Howard University School of Medicine	(1912) (1927)	Kansas S. Carolina, (1927), (1928-2) Dist. Colum.
University of Georgia Medical Department	(1902)	Georgia
Chicago Homeopathic Medical College	(1903)	Ohio
Hahnemann Medical College and Hospital of Illinois	(1907)	Illinois
Loyola University School of Medicine	(1920) (1928), (1929)	Mass. Illinois
Northwestern Univ. M. S.	(1914), (1926), (1928-2), (1929)	Illinois
Rush M. C.	(1906), (1919), (1926-2), (1927), (1928), (1929)	Illinois
University of Illinois College of Medicine	(1928) (1927-2), (1928)	Missouri Illinois
Indiana University School of Medicine	(1925, (1926-2)	Indiana
Medical College of Indiana	(1905)	Indiana
State University of Iowa College of Homeo. Med.	(1907)	Iowa
State University of Iowa College of Med.	(1925-2), (1926)	Iowa
University of Kansas School of Med.	(1928) Kansas, (1922)	Missouri
Univ. of Louisville School of Med.	(1927) Kentucky, (1927)	Indiana
Harvard University Medical School	(1895), (1906) (1921) New York, (1927) California	Mass.
Tufts College Medical School	(1915) New York, (1927)	Penna.
University of Minnesota Medical School	(1924), (1929)	Minnesota
Washington University School of Medicine	(1927)	Missouri
Creighton University School of Medicine	(1923), (1928-2)	Nebraska
University of Nebraska College of Medicine	(1922), (1926)	Nebraska
Cornell University Medical School	(1924)	Minnesota
Syracuse University College of Medicine	(1920), (1924)	New York
University of Buffalo School of Medicine	(1913), (1923)	New York
Eclectic Medical College of Cincinnati	(1928)	Ohio
Medical College of Ohio	(1897)	Ohio
Ohio State University College of Medicine	(1926), (1928)	Ohio
University of Cincinnati College of Medicine	(1927)	Ohio
Western Reserve University School of Medicine	(1912)	Ohio
University of Oklahoma School of Medicine	(1917)	Oklahoma
Hahnemann Med. Coll. of Philadel.	(1905) Vermont, (1925)	New Jersey
Jefferson Medical College	(1918) Wisconsin, (1927-2)	Penna.
Medico-Chirurgical College of Philadelphia	(1914)	Penna.
Temple University School of Medicine	(1927)	Penna.
University of Pennsylvania School of Medicine	(1921) (1928) New Jersey	Penna.
University of Pittsburgh School of Medicine	(1923), (1928)	Penna.

Western Pennsylvania Medical College	(1898)	Penna.
Meharry Medical College	(1905), (1923) Tennessee, (1910)	Georgia
University of Tennessee College of Medicine	(1915)	Arkansas
University of Vermont College of Medicine	(1926)	Vermont
Medical College of Virginia	(1926)	Virginia
Milwaukee Medical College	(1907)	Wisconsin
McGill University Faculty of Med	(1923) Illinois, (1927)	Oklahoma
University of Toronto Faculty of Medicine	(1926) (1926), (1927) Ohio	Wyoming
University of Western Ontario Medical School	(1891)	Ohio
University of Paris Faculty of Medicine	(1923)	R. Island
National University of Athens Faculty of Medicine	(1909)	Ohio

Oregon Reciprocity Report

Dr. Joseph F. Wood, secretary of the Board of Medical Examiners of the State of Oregon, reports 25 physicians licensed by reciprocity with other states and 3 by the endorsement of their credentials in December, 1929. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical School		(1927)	Michigan
University of Colorado School of Medicine		(1913)	Utah
Chicago Medical School		(1918)	Illinois
Hahnemann Medical College of Illinois		(1907)	Illinois
Northwestern University Medical School		(1903)	N. Dakota
Rush Medical College	(1902) Minnesota, (1904)		Illinois
University of Illinois College of Med.	(1907) Illinois, (1913)		Wisconsin
University of Michigan Medical School		(1918), (1926)	Michigan
St. Louis University Medical School	(1921), (1926) Missouri	(1910)	Wisconsin
Creighton University School of Medicine		(1915)	Missouri
University of Oklahoma School of Medicine		(1912)	Oklahoma
University of Oregon Medical School		(1927)	California
Jefferson Medical College		(1927)	Penna.
Medical College of the State of South Carolina		(1923)	Florida
University of Manitoba Faculty of Medicine		(1925)	Illinois
Osteopaths	(1) Missouri, (1) Wisconsin, (1) Iowa, (1) Minn.,		(1) Calif.

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
Harvard University Medical School	(1925), (1927)		N. B. M. Ex.
University of Oregon Medical School		(1928)	N. B. M.Ex.

Iowa August Examination

Mr. H. W. Grefe, director of examinations and licensure of the Iowa Department of Health, reports a list of licentiates by both reciprocity and examination from April to August, 1929. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1928)	90.2
Northwestern University Medical School	(1929) 83, 85.6, 86.7, 86.9		
State University of Iowa College of Medicine	(1926) 86.1, 86.2, 90.4, (1927) 88.4, (1928) 76.4, 83.4, 83.7, 83.7, 83.9, 84.6, 84.6, 84.6, 84.9, 85, 85.2, 85.2, 85.4, 85.4, 85.6, 85.6, 85.6, 85.9, 85.9, 85.9, 86.1, 86.2, 86.2, 86.2, 86.2, 86.4, 86.5, 86.6, 86.7, 86.7, 86.9, 87, 87, 87.1, 87.1, 87.1, 87.1, 87.2, 87.4, 87.4, 87.4, 87.7, 87.7, 87.9, 87.9, 88.2, 88.4, 88.4, 88.7, 88.7, 89.4, 91.1	(1925)	89.7,
University of Kansas School of Medicine		(1928)	86.1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1928)	Arkansas
College of Medical Evangelists		(1920)	California
Northwestern University Medical School		(1921), (1926)	Illinois
Rush Medical College		(1929)	Illinois
University of Michigan Medical School		(1922)	Michigan
St. Louis University School of Medicine		(1928)	Missouri
Washington Univ. School of Med.	(1926) Wisconsin, (1927)		Kansas
Creighton University School of Medicine		(1928)	Nebraska
University of Nebraska Coll. of Med.	(1926) Nebraska, (1928)		Kansas
Marquette University School of Medicine		(1929)	Wisconsin

Iowa November Examination

Mr. H. W. Grefe, director of examinations and licensures of the Iowa Department of Health, reports the written examination held at Des Moines, Nov. 7, 1929. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Seven candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical College		(1929)	85.7,* 88.9
Long Island College Hospital		(1925)	81.5
University and Bellevue Hospital Medical College		(1929)	89.9
Harvard University Medical School		(1926)	88.2
McGill University Faculty of Medicine		(1925)	89.6
University of Wurzburg Faculty of Medicine		(1925)	83 †

* This applicant has received his M.B. degree and will receive his M.D. degree on completion of one year's internship.
† Verification of graduation in process.

Book Notices

PHYSICAL MEASURES OF GROWTH AND NUTRITION. By Raymond Franzen, Ph.D., Director of Research, School Health Study, American Child Health Association. School Health Research Monographs, Number 2. Paper. Price, $1. Pp. 138. New York: American Child Health Association, 1929.

In 1927 the American Child Health Association instituted a school health study or research to be conducted by thoroughly qualified observers on material which should be of such character and amount as to make it possible to draw well founded conclusions. The first report dealt with health education tests; the present report has to do with physical measures of growth and nutrition. It embodies the study of numerous measurements of about 8,000 pupils of the fifth and sixth grades (10, 11 and 12 year old children) in seventy schools in as many cities. The tests and measurements were applied by fifteen field workers of the American Child Health Association. This monograph is devoted to an analysis of the anthropometric data thus obtained, in an effort to devise measures for use in the general field of growth, development and nutrition. These and more accurate quantitative methods, when tested out in actual school practice, should aid in the development of school health programs.

The first part of the report deals with nutrition, a term which has been loosely used by physicians as well as teachers without a uniform conception of its significance. It was found, for example, by Dr. Franzen that, when two separate examinations are made of the same child by two experienced pediatricians, there is frequently a wide variation in the conclusions arrived at as to the nutritional status of the child. To strike an average of the estimate of two such examinations is far from satisfactory. When conclusions are drawn, however, from the reports of five or more competent pediatricians, the balance struck would be quite satisfactory. Obviously such a procedure as examination of each child by five such examiners is out of the question. What is needed, if such can be found, is a series of objective measurements which can be readily and accurately made and the correlation of which will afford a definite measure of the state of nutrition of the child. Up to the present the only measurements that have been generally used are those of the height and weight in relation to the age of the child, and great reliance has been placed on the height, weight and age charts as standards to which every child should conform. These height and weight measurements have served a useful purpose as a ready and striking objective demonstration and as a means of enlisting and holding the interest of the parent and teacher to the nutritional condition and progress of the child. It has been the opinion, however, of most physicians who devote themselves exclusively to the care and study of children that the importance attached to a 7 or 10 per cent deviation of a child's weight from the average set down in the table has no justification in their experience.

This report emphasizes the fallacy of the height and weight standard as it has been so widely used. Weight alone fails to consider skeletal dimensions and the bulk of the soft parts. It is therefore an inaccurate measure of nutrition when considered with sole reference to height. To arrive at a satisfactory estimate of the nutritional condition of the individual examined, other measurements must be considered, among them shoulder width, breadth and depth of the chest, width of the hips, size of the deltoid muscle, girth of the arm and the calf, and thickness of the subcutaneous tissue over the biceps, triceps and calf. Numerous tables are presented in the report in which measurements of these several items, and others, are set down and the possibilities of correlation estimated. Some of the biometric equations are technical and will be difficult for most physicians to unravel, but it is not essential that they be fully comprehended in order to sense their significance. Following the analytic account of the weight, the report discusses an analytic account of muscle size and amount of subcutaneous tissue, the symmetry of growth, age and sex differences, and determinations of the residuals for arm and calf girth and biceps subcutaneous tissue. The instruments used in making measurements are pictured and their method of use is described.

This report includes a large amount of material for the testing of new and more accurate methods of biometric studies of children. Out of such study and trial it may be hoped that there will be developed a scheme of physical measurements which will be more satisfactory than those now available.

DIAGNOSTISCHE UND THERAPEUTISCHE IRRTÜMER UND DEREN VERHÜTUNG: INNERE MEDIZIN. Herausgegeben von Prof. Dr. J. Schwalbe, Geh. San.-Rat in Berlin. Heft 1: Krankheiten des Stoffwechsels. Von Professor Dr. S. Isaac, Dirigierender Arzt der inneren Abteilung des Krankenhauses der Israelitischen Gemeinde in Frankfurt a. M. Second edition. Paper. Price, 10 marks. Pp. 150, with 12 illustrations. Leipzig: Georg Thieme, 1929.

Any one familiar with the first edition of this series on diagnostic and therapeutic errors and their avoidance must welcome the revised edition, of which the first instalment is at hand. Each of these brochures is written or revised by a specialist but is intended for the general practitioner. The announcement on the fly-leaf that "this work when completed will be translated into Italian and Spanish" makes one wonder why not also into English. Are the English-speaking physicians less prone to diagnostic and therapeutic errors, or is this a suggestion that they do not even know that they make them? Under "constitutional leanness," Isaac points out among many other useful facts that protein is the least suitable of the alimentary principles to secure gain in weight and that insulin (from 5 to 20 units three times a day) is likely to be a potent stimulant of appetite in some cases. Not only should insulin soon be followed by a carbohydrate-rich meal; the secondary slighter fall in blood sugar that occurs two or three hours after its administration calls for another smaller carbohydrate meal. In connection with "obesity" he calls attention to the pseudo-angina pectoris so common in fat persons, due to meteorism and high position of the diaphragm, which may be cured by proper attention to the cause. He speaks of the fact that pulmonary tuberculosis may occur in the obese and that, when it does, its progress is quite unfavorable as the usual hypernutrition therapy fails in such cases. He warns physicians to think of pancreatic necrosis whenever an obese person complains of severe epigastralgia. He admits frankly that, in the majority of cases of obesity, present methods of examination do not differentiate clearly between the various types. It is a mistake to undertake a reduction cure in the presence of tuberculosis, hyperthyroidism or severe neuroses. He recommends milk days and fruit days coupled with rest, interspersed between other days of more generous diet, as superior to a monotonous dietary schedule. He finds diuretic treatment, especially mersalyl (0.2 Gm. intramuscularly once or twice a week), particularly when combined with the special diet days, a powerful measure to antagonize the obese person's well known tendency to water retention, and the experience, to them so thoroughly discouraging, that, in spite of the self-denial, they do not lose any weight. He also recommends six weeks' courses, several times yearly, of thyroid in doses not exceeding 1 Gm. a day in periods of three days, with one or more days of rest, under medical supervision, of course. In connection with diabetes mellitus, the author soothes the conscience of the general practitioner with the statement that frequent blood sugar tests are entirely superfluous, and that keeping the urine free from sugar suffices. Diagnostic blood sugar tests are necessary, however, especially in the patient with chronic nephritis with high blood pressure who may have high blood sugar without glycosuria; and, of course, for the discovery of renal diabetes. Blood sugar need not be kept at exactly the normal level; indeed, a level of from 180 to 200 mg. per hundred cubic centimeters is generally sufficiently low. Indeed, he warns against lowering it to a great extent, as this is generally unpleasant to the patient and may even be serious in its effect in patients with myocardial weakness or coronary arteriosclerosis. He considers Lugol's acetone reaction generally too sensitive to be of much clinical importance, but Gerhardt's ferric chloride reaction for diacetic acid, on the other hand, an important indication of danger. The prescribing of diet and of insulin is given with practical directness and stripped of the theoretical sophistries so common in this field. All this may suffice to show that this little book contains a great wealth of help in everyday practice, more than many an imposing tome on the same subject.

ESSENTIALS OF MEDICAL ELECTRICITY. By Elkin P. Cumberbatch, M.A., B.M., D.M.R.E., Medical Officer in Charge, Electrical Department, St. Bartholomew's Hospital. Sixth edition. Cloth. Price, $4.25. Pp. 443, with 127 illustrations. St. Louis: C. V. Mosby Company, 1929.

The first portion of the book deals with the mode of production, action and sources of the electric current. The author lays great stress on the benefits to be derived from the low voltage currents, discussing the galvanic, sinusoidal and faradic currents and their various combinations. The physiologic and chemical effects of these currents are given, with indications for their use and dangers to guard against. The use of acupuncture in the treatment of peripheral neuritis, and the results obtained, are substantiated by case reports. The testing for the reaction of degeneration is taken up in detail. This is of great importance to electrotherapeutists who treat nerve injury cases. The portion devoted to the discussion of the high frequency and static currents should be of great benefit, since it brings this subject down to date, giving the mode of production and the indications and contraindications for their use. The last chapter, devoted to the physics of the electric current, is an enlightening introduction to the field of electricity. This book is an improvement over the former edition. It is larger, is better bound, and contains more illustrations. It should be of especial benefit to those physical therapeutists who are interested in the use of the low voltage currents.

A CONTRIBUTION TO THE KNOWLEDGE OF LYMPHOGRANULOMA INGUINALE. By Sven Hellerström, Lic. Med. From the Pathological Department, and the Dermato-Venereological Clinic. Paper. Pp. 224, with 16 illustrations. Stockholm: P. A. Norstedt & Söner, 1929.

This monograph (which is supplement 1 of *Acta dermato-venereologica*) is a valuable study of so-called inguinal granuloma based mainly on forty-seven cases observed or collected by the author in Sweden, mostly during 1927 and 1928. Inguinal granuloma, sometimes called the fourth venereal disease and known also as tropical bubo and climatic bubo, is not at all limited to the tropics but occurs in all parts of the world. As described by Hellerström, inguinal granuloma is a subacute or chronic inguinal adenitis and periadenitis following a primary minute erosion or ulcer, usually developing fourteen days or so after exposure. Of Hellerström's forty-seven cases, only two occurred in women. The lesion in the lymph nodes presents a picture that reminds one of tuberculosis and perhaps even more of certain forms of Hodgkin's disease; the main feature is suppuration in foci, walled off by epithelioid cells among which are giant cells. The actual cause has not been established and the disease has not been transferred to animals. The distinctive test at present is a characteristic reaction—Frey's reaction—which develops after the intracutaneous injection of an extract or so-called antigen prepared from the pus of the adenitis. Hellerström used this test extensively in his studies and all his patients gave a positive reaction. The cutaneous allergy on which this test seems to depend is said to develop within a few weeks after the beginning of the adenitis and may persist for years. The best treatment for inguinal granuloma is extirpation of the affected glands. Hellerström reviews the literature on inguinal bubo and of inguinal granuloma especially and his monograph will be of interest to all students of this condition, which will require much further study before it can be established satisfactorily as an etiologic entity.

CORONARY THROMBOSIS: ITS VARIOUS CLINICAL FEATURES. By Samuel A. Levine, Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston. Medicine Monographs, Volume XVI. Cloth. Price, $3. Pp. 178, with illustrations. Baltimore: Williams & Wilkins Company, 1929.

Acute occlusion of a coronary artery, an accident that is usually due to thrombus formation, has in the last few years, and largely through the work of American investigators, come to be regarded as a clinical entity rather than a pathologic curiosity. Dr. Levine at the Peter Bent Brigham Hospital has made excellent use of his rich opportunities to familiarize himself with this condition, as has been manifest by numerous articles of the last few years and now by this monograph. This is the most comprehensive review of our knowledge concerning this disease. The historical background is discussed as well as etiology, pathology and treatment. Brief protocols of 145 cases are given. As is well known, great help is afforded by the

electrocardiogram in the diagnosis as well as in the prognosis; there are many helpful electrocardiograms in the book. The discussion of symptomatology and diagnosis is especially full. There is a satisfactory bibliography.

MEDICAL GUIDE FOR INDIA AND INDEX OF TREATMENT. By E. J. O'Meara, O.B.E., Lt.-Col., I.M.S. Third edition. Cloth. Price, 25/-s net. Pp. 1138, with illustrations. London: Butterworth & Company, Ltd., 1929.

Here is a veritable "omnibus" in medicine, surgery, obstetrics and the specialties, including dentistry. Its object is "to give all classes of practitioners in India a brief compact reference to questions arising in the course of their daily work." The moment one opens the book one senses the breath of a foreign atmosphere. Its typography is different from ours. In places, its language is quite incomprehensible to us, as in the article dealing with Indian dietetics and in that on the prescribing of indigenous drugs. One feels that it is for the pioneer medical man who, located in an almost impenetrable jungle far from the resources of civilization, must battle single-handed and with the aid of a single book all the diseases and emergencies of mankind. Judged by our standards it is a rather crude piece of work, full of sins of omission and of commission; but the fact that the book has been through three editions and two reprints and that a steady demand has been maintained for more than eight years shows that it must serve some local purpose.

A CHEMICAL DICTIONARY CONTAINING THE WORDS GENERALLY USED IN CHEMISTRY, AND MANY OF THE TERMS USED IN THE RELATED SCIENCES OF PHYSICS, ASTROPHYSICS, MINERALOGY, PHARMACY, AND BIOLOGY, WITH THEIR PRONUNCIATIONS. Based on Recent Chemical Literature. By Ingo W. D. Hackh, Professor of Chemistry, College of Physicians and Surgeons, a School of Dentistry, of San Francisco, California. Cloth. Price, $10. Pp. 790, with illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1929.

The appearance of a dictionary is an event of the first magnitude in the realm of language and literature. The appearance of a dictionary covering the terminology of a specialized field of knowledge is of no less importance to interested workers in that field. This is especially true when the dictionary happens to be the first ambitious attempt to define the terms current in that science. Because of the ever increasing encroachment of chemistry into other fields of knowledge, especially in biologic science of which medicine is a part, this work will be welcomed by biologic workers and physicians as much as by chemists.

The present work is the first ambitious attempt to present and define accurately "the words generally used in chemistry, and many of the terms used in the related sciences of physics, astrophysics, mineralogy, pharmacy and biology, with their pronunciations." The work is accompanied with elaborate tables, diagrams, portraits and many other illustrations.

What the American Illustrated Medical Dictionary (Dorland's) is to the busy physician and research worker in medical science, Hackh's Chemical Dictionary promises to be to chemists and all others who have occasion to use chemical terminology. It is gratifying to note that the same system of chemical nomenclature used in the preparation of Dorland's dictionary is used in the present work. This system is based on the method successfully worked out by *Chemical Abstracts* of the American Chemical Society. In addition, a number of other standard works on the United States Pharmacopeia and the International Critical Tablets were used. This feature assures that the most accepted classifications are adopted.

There are many illustrations of chemical apparatus and portraits of famous chemists, among them many who are living. The advisability of including the portraits of contemporary chemists in a work of this kind is open to question.

Whenever the name of a chemical compound is given, there is generally included the formula. The properties of the more common chemical substances are included.

Several inconsistencies in the spelling of the names of chemical compounds are noted. The active principle of the thyroid gland is spelled thyroxin. Thyroxine, as is well known, is an alpha amino acid. However, under the amino acids the final *e* is included; e. g., glycine, alanine, tyrosine. This and other minor inconsistencies will no doubt be corrected in future revisions, of which there should be many to keep the work thoroughly down to date.

The book is printed on a good grade of paper and neatly bound. In view of the great use to which a work of this sort can be put, it might have been more desirable to use a more durable and lighter paper stock—for example, a good grade of india paper.

The work is a labor of love with the author. No doubt many chemists and physicians will want to share the fruits of this labor with him, to their mutual advantage.

RÖNTGENDIAGNOSE DER KINDLICHEN LUNGEN- UND KNOCHENTUBERKULOSE. I: Röntgenatlas der Lungentuberkulose des Kindesalters. Von Dr. Kurt Klare, und Dr. Knüsli. Second edition. Paper. Price, 11 marks. Pp. 115, with 55 illustrations. Leipzig: Curt Kabitzsch, 1929.

This monograph is devoted to pulmonary tuberculosis in childhood. Thirty-five case histories are included, together with physical observations, treatment and the clinical course, and a summary of the results. The cases are well illustrated by the reproduction of fifty-five roentgenograms. The cases are selected to illustrate various types of pathologic conditions.

Medicolegal

Invalid Restrictions on the Sale of Drugs

(State v. Geest (Neb.), 225 N. W. 709)

Geest, a retail grocer, displayed, offered for sale and sold acetylsalicylic acid, commonly called aspirin. He was not a licensed pharmacist. The laws of Nebraska forbid the practice of pharmacy without a license and define such practice as engaging in the business of selling or offering or exposing for sale drugs and medicines at retail. For the purposes of the law, "drugs and medicines" include all substances and preparations recognized in the United States Pharmacopeia or National Formulary, and acetylsalicylic acid, or aspirin, is recognized in both of the reference books named. Within the terms of the statute, Geest was clearly practicing pharmacy without a license, and prosecution was therefore instituted against him. The trial court, however, held that the statute was invalid. It tended, the court said, to grant to licensed pharmacists a monopoly of the sale of many useful, harmless drugs and substances in a way that does not tend to promote the public health or welfare, and it was on that account an unwarranted interference with the right of the defendant to conduct a legitimate business. The defendant was therefore discharged, and the state, by writ of error, sought a review of the decision by the supreme court of Nebraska.

Among the items listed in the Pharmacopeia, said the supreme court, are many articles of general household use which are in themselves harmless, such as salt, soda, soap, mutton suet, rose water, glycerin, distilled water, olive oil, honey, syrup, and many other articles, all of which the statute allows to be sold only by licensed pharmacists. The courts of New York, and possibly the court of some other states, have held that such a limitation on the sale of harmless drugs is lawful; but numerous decisions in other states are to the effect that pharmacy acts which confer on registered pharmacists exclusive rights and privileges to vend proprietary medicines, without examination or analysis, or give such pharmacists the exclusive right to sell useful and harmless articles that may be equally well sold and handled in grocery stores are unconstitutional. If the Nebraska act, while limiting to licensed pharmacists the right to sell even the harmless medicines and drugs listed in the United States Pharmacopeia or National Formulary, required such pharmacists to make an analysis or inspection of the drugs and medicines sold by them and to certify to the purity thereof, a different situation would be presented; but the law imposes no such duty. It is apparent, therefore, that the law does not tend to promote public safety or welfare by the limitation referred to.

We do not wish to be understood, said the supreme court, as holding that aspirin is a harmless drug or that its sale should not be limited to registered pharmacists. The court was confronted with the proposition, however, that the act limits the sale of all "drugs and medicines," those that are harmless as well as those that are harmful; the act makes no distinction

between distilled water and salt, on the one hand, and strychnine, arsenic and opium, on the other. If it were so framed that the court could eliminate from its operation those articles that are useful and harmless and leave it in force as to those articles with respect to which the public safety or health would be promoted by the restriction of sales, the court would modify the law accordingly. As the act is framed, however, any such modification is a legislative function, not a judicial function. The supreme court, therefore, held the law invalid so far as it undertook to limit to licensed pharmacists the sale of all articles listed in the United States Pharmacopeia or National Formulary. The judgment of the lower court was affirmed.

Sale of Lenses to Correct Vision Unlawful

(Commonwealth v. S. S. Kresge Co. (Mass.), 166 N. E. 558)

The appellant, the S. S. Kresge Company, displayed divers types and kinds of eyeglasses, on or within showcases, accessible to all. Near such showcases and intended for the use of prospective purchasers were cards containing words and phrases printed in various sizes of type, each size designated by a number. The corresponding number appeared on the eyeglasses, so that customers could examine the eyeglasses designed to fit particular defects of vision. On inquiry or request respecting the test cards, customers were advised how to use them. Then an employee of the company, at the request of the customer, picked from its stock in the showcase eyeglasses bearing the number corresponding to the number appearing on the card and indicated by the customer. If by looking at the type so numbered, through such eyeglasses, the customer found them satisfactory, the glasses were sold by the company to the purchaser. On the facts stated, the company was found guilty of violating the law relating to the practice of optometry and it thereupon appealed to the supreme judicial court of Massachusetts.

The company contended that the law was unconstitutional in that it undertook to make it unlawful for any person other than a licensed practitioner of optometry or a licensed physician and surgeon to sell or attempt to sell spectacles, eyeglasses or lenses for the purpose of correcting defective vision. In making this contention, the company relied to a considerable extent on *Louis K. Liggett Co.* v. *Baldridge*, 278 U. S. 105, 49 S. Ct. 57. The supreme judicial court, however, turned that case against the appellant and quoted from it:

> That appellant's business is a property right, . . . and as such entitled to protection against state legislation in contravention of the federal constitution, is, of course, clear. That a corporation is a "person" within the meaning of the due process and equal protection clauses of the fourteenth amendment, and that a foreign corporation permitted to do business in a state may not be subjected to state statutes in conflict with the federal constitution, is equally well settled. . . . And, unless justified as a valid exercise of the police power, the act assailed must be declared unconstitutional because the enforcement thereof will deprive appellant of its property without due process of law. The act is sought to be sustained specifically upon the ground that it is reasonably calculated to promote the public health; and the determination we are called upon to make is whether the act has a real and substantial relation to that end or is a clear and arbitrary invasion of appellant's property rights guaranteed by the constitution. . . . The police power may be exerted in the form of state legislation where otherwise the effect may be to invade rights guaranteed by the fourteenth amendment only when such legislation bears a real and substantial relation to the public health, safety, morals, or some other phase of the general welfare. . . . A state cannot, "under the guise of protecting the public, arbitrarily interfere with private business or prohibit lawful occupations or impose unreasonable and unnecessary restrictions upon them." (Citations are omitted.)

The supreme judicial court held that the statute under which prosecution had been instituted in the present instance conformed to every requirement for validity thus laid down by the United States supreme court. The S. S. Kresge Company, the appellant in this case, undertook to invade, under the guise of a private mercantile business, a field rightly sequestered by the legislature, in the interests of the public health, to those possessing special skill and training in a special department of treatment of human ills. The court held the Massachusetts optometry practice act to be free from the defects found by the United States supreme court to be fatal to the Pennsylvania statute held unconstitutional in the Liggett case. There was, therefore, no error of law in the finding of the court below, and the exceptions filed by the appellant were overruled.

Insurance: Accident: Myocarditis as a Contributing Cause of Death.—The deceased was insured against accident and sickness. He died after an automobile accident. The coroner testified that the direct cause of death was traumatic shock, with chronic myocarditis and arteriosclerosis as an indirect contributing cause. Instructions tendered by the insurer, and refused by the trial court, were to the effect that if the insured was suffering from arteriosclerosis and myocarditis and if his death resulted from traumatic shock caused by external, violent and accidental means, in conjunction with those pathologic conditions, the beneficiaries could not recover. One proffered instruction was to the effect that if his bodily infirmities were aggravated by the accident, and if the accidental injury and his infirmities contributed to his death, there could be no recovery. On an appeal by the insurer from an adverse verdict in the trial court, the appellate court of Indiana, in banc, held that these instructions were rightly refused.—*Kokomo Life & Acc. Ins. Co. v. Wolford (Ind.), 167 N. E. 156.*

Workmen's Compensation: Heat Prostration and Heart Disease.—The fact that an injured employee is susceptible by reason of disease or idiosyncrasy to the hazards of a particular employment does not prevent the award of compensation for injury or death proximately caused by an accident arising out of such employment. In such a case the accident must be recognized as arising out of the employment, notwithstanding that the disease or idiosyncrasy is a remote cause of it. Therefore the fact that an employee has an organic heart lesion does not, in the opinion of the Supreme Court of Iowa, prevent an award to his widow, under the workmen's compensation act, when his death follows exposure in the course of his employment, to a high temperature caused by artificial heat.—*Belcher v. Des Moines Electric Light Co. (Iowa) 225 N. W. 404.*

Medical Practice Acts: Proof of Use of Drugs Not Necessary to Conviction.—In the course of the trial of a "magnetic healer" for violating the medical practice act of Iowa, the court instructed the jury that a person should be deemed to be engaged in the practice of medicine and surgery if he publicly professed to assume the duties incident to such practice; that the duties incident to such practice cover the holding out of oneself as a physician and the treating of other persons for the relief or cure of ailments or diseases of the mind or body; and that treatment need not necessarily have been restricted to the giving of medicine but may have been by other and different treatment. The defendant was convicted and appealed to the supreme court of Iowa. The argument for the defendant, said the supreme court, is that inasmuch as he gave no medicine he could not be guilty of practicing medicine. The term "practice of medicine," as defined by the Iowa statute, is not confined to the administering of drugs, but one who publicly professes to be a physician and induces others to seek his aid as such is practicing medicine. It is not requisite that he shall profess in terms to be a physician. It is enough if he publicly profess to assume the duties incident to the practice of medicine. Manifestly the first duty of a physician to his patient is to diagnose his ailment. Then follows the duty of prescribing the proper treatment. If, therefore, one publicly profess to be able to diagnose human ailments and to prescribe proper treatment therefor, he is engaged in the practice of medicine within the meaning of the law. The judgment of the court below was sustained.—*State v. Hughey (Iowa) 226* N. W. 371.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York, February 21-22. Dr. George S. Stevenson, 370 Seventh Avenue, New York, Secretary.

American Pharmacological Society, Chicago, March 27-29. Dr. E. O. Brown, University of Minnesota, Minneapolis, Secretary

American Physiological Society, Chicago, March 26-29. Dr. A. C. Redfield, 240 Longwood Avenue, Boston, Secretary.

American Society for Experimental Pathology, Chicago, March 26-29. Dr. Carl V. Weller, University of Michigan, Ann Arbor, Secretary.

American Society of Biological Chemistry, Chicago, March 26-29. Dr. H. B. Lewis, University of Michigan Medical School, Ann Arbor, Sec'y.

Federation of American Societies for Experimental Biology, Chicago, March 26-29. Dr. A. C. Redfield, 240 Longwood Avenue, Boston, Sec'y.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Dis. of Children, Chicago

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Nature and Uses of Lysed Typhoid Vaccines. J. Caronia, San Francisco.—p. 1.
*Investigation of Some Fabrics Used in Manufacture of Underclothing. C. E. Snelling and A. Brown, Toronto, Canada.—p. 9.
*Relative Digestibility of Unsweetened Evaporated Milk, Boiled Milk and Raw Milk by Trypsin in Vitro. Z. Wallen-Lawrence and F. C. Koch, Chicago.—p. 18.
*Blood Transfusion in Diseases of Infants and Children. L. Krahulik and L. A. Koch, New York.—p. 34.
*Comparative Value of Irradiated Ergosterol and Cod Liver Oil as Prophylactic Antirachitic Agent When Given in Equivalent Dosage According to Rat Units of Vitamin D. D. J. Barnes, M. J. Brady and E. M. James, Detroit.—p. 45.
*Lymphatic Leukemia Without Leukocytosis. C. M. Hyland, Los Angeles.—p. 59.
*Scarlet Fever Toxoid. H. O. McMahon, Milwaukee.—p. 66.
*Thumb Sucking Apparatus. W. W. Anderson, Atlanta, Ga.—p. 70.
*New Method for Determination of Basal Metabolism of Babies and of Small Children. H. L. Higgins and V. Bates, Boston.—p. 71.
*Celiac Disease. M. V. K. Nelson, Iowa City.—p. 76.
*Internal Hemorrhagic Pachymeningitis in Young Children: Six Cases. F. C. Hunt, New York.—p. 84.
*Interpretation of Roentgenograms of Chest in Children Based on Observations at Necropsy: III. Diseases of Lungs, of Pleura and of Mediastinum. J. A. Bigler, Chicago.—p. 91.
*Blood Diphtheria Antitoxin Studies. R. G. Flood, San Francisco.—p. 107.
Familial Hemolytic Anemia of Childhood—Von Jaksch. M. Wollstein and K. V. Kreidel, New York.—p. 115.
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Familial Congenital Spastic Diplegia: Three Cases in One Family. F. Powdermaker, New York.—p. 148.
*Hemolytic Streptococcic Septicemia: Case. C. S. Roller, Los Angeles.—p. 157.
Age, Sex and Seasonal Incidence of Certain Diseases in Children. F. F. Tisdall, A. Brown and A. D. Kelly, Toronto, Canada.—p. 163.
Resuscitation of Asphyxiated New-Born Infants. R. S. Cron, Milwaukee.—p. 174.
John Pechey, 1655-1718. J. Ruhräh, Baltimore.—p. 179.

Investigation of Some Fabrics Used in Manufacture of Underclothing.—Snelling and Brown report the results of a study of the different properties of the various fabrics used in the manufacture of infants' underclothing and diapers. They conclude that the ideal underwear is one combining warmth, ready and rapid absorption, lack of skin irritation and durability with moderate cost. The two layer fabric has all these properties to the greatest extent and because of the wool on the outer surface, the heat retention power and durability are greatest; with bleached cotton next to the skin, absorption of body moisture and lack of irritation are insured. This two layer fabric is more expensive than cotton, but not as expensive as wool. The properties to be considered in choosing the most useful type of diaper are ready and rapid absorption, softness, elasticity, durability and relative cost. The knitted bleached cotton diaper absorbs rapidly; it is soft and elastic, and it fits the body. The experience of those using the knitted diapers has shown that they will last for at least three children, and that in that time their efficiency does not decrease. The initial cost is nearly double, but the woven diapers do not usually wear for more than one child. When wet, a woven material is harsh next to the skin. The efficiency of the woven diapers with the fuzzy surface becomes much less after a few washings. The woven fabrics will not conform to the shape of the body, but make the child conform to the shape of the diaper. Thus it can readily be seen that economically, and for relative usefulness, the knitted bleached cotton diaper is a real advance over the woven fabrics.

Relative Digestibility of Unsweetened Evaporated Milk, Boiled Milk and Raw Milk by Trypsin in Vitro.—The digestibility, in vitro, of evaporated, boiled and pasteurized milks has been compared by Wallen-Lawrence and Koch with that of whole raw milk. The criteria of digestibility have been the increase in total soluble nitrogen and the increase in refractometric readings of the protein-free filtrates before and after a period of digestion. Their results show that milk when pasteurized, boiled or evaporated undergoes changes which make it more readily digested by trypsin in vitro than is raw milk. The changes are quantitatively greater for boiled and evaporated milk than for pasteurized milk. The increase in trypsin digestibility appears to be a function of the temperature to which the milk is heated and the length of time it is heated. The increase in trypsin digestibility is not correlated with a change in the buffer system of milk incidental to heating. The increase in trypsin digestibility is not correlated with a change in the casein of the milk. The change in trypsin digestibility is due to some heat-labile constituent of the whey. It is anticipated that this inhibitory substance will be found in the albumin portion of the whey. Calcium and phosphate are probably not involved. It has been assumed that the tryptic inhibitor reacts monomolecularly with trypsin to inactivate it, and on this assumption theoretical curves have been calculated which show a marked resemblance to the curves obtained by actual experiment. It is suggested that no practical significance can be attached to these results until the effect of peptic digestion as a precursor to tryptic digestion has been studied. The question whether the physical nature of the curd alone is responsible for the greater digestibility of heat treated milk in the stomach remains unanswered.

Blood Transfusion in Diseases of Infants and Children.—In a study of 763 transfusions Krahulik and Koch have been impressed by the large number of conditions which were benefited by its use. They classify these into four groups: (1) infections with secondary anemia, (2) nutritional disorders with and without infection, (3) diseases of the blood and (4) preoperative and postoperative conditions. They point out that transfusion is of considerable value in the treatment of certain infections accompanied by secondary anemia. Patients with lobar pneumonia and bronchopneumonia with anemia are definitely benefited by transfusion. Blood transfusion used in the treatment of various nutritional disorders complicated by anemia is a most valuable therapeutic agent. In the preoperative preparation of infants with pyloric stenosis transfusion and the administration of physiologic solution of sodium chloride are indispensable. The proper selection of donors is of utmost importance in preparation for transfusion. The method which permits the transfusion of unmodified whole blood without the delay due to complicated apparatus is the method of choice. Certain precautions must be taken to minimize reactions and ill effects from transfusions. A simple rule, based on weight, for the computation of the amount of blood to be given at one transfusion is recommended. These amounts can be closely computed by use of the principle of Young's rule for the dosage of drugs.

Comparative Value of Viosterol and Cod Liver Oil as Prophylactic Antirachitic Agents.—Cod liver oil prevented or cured rickets in 95 per cent of the cases studied by Barnes et al. when given in a dosage of 3 teaspoonfuls daily (1,400 rat units of vitamin D). In view of the subjects who were normal or improved at the end of the experiment, it may be said that 98 per cent were either well or benefited. A mixture of cod liver oil plus viosterol in a dosage of 3 teaspoonfuls (3,750 rat units of vitamin D daily) prevented or cured rickets in 98 per cent of the cases. There was no evidence of superiority among this group as compared with the group given cod liver oil. Viosterol in a daily dosage of 1,250 rat units of vitamin D prevented or cured rickets in only 44 per cent of the cases studied. The results in this group were not significantly better than those for the control group of untreated subjects. Cod liver oil in a dosage of 1,400 rat units of vitamin D a day was a much more satisfactory antirachitic agent than was viosterol in an approximately equivalent rat unit dosage. It would seem that there is no justification for considering rat units of vitamin D in viosterol as being equivalent to the same number of rat units of vitamin D in cod liver oil as a curative or prophylactic remedy for rickets. There is no definite evidence

of a greater incidence of rickets among formula-fed than among breast-fed infants. There is evidence of a greater need for protection against rickets among the colored infants, as is shown by the greater final incidence of rickets among these infants in the control series and in the group given viosterol. It is also clear that these infants are protected successfully by a daily dose of 3 teaspoonfuls of cod liver oil (1,400 rat units).

Lymphatic Leukemia Without Leukocytosis.—Three cases have been observed by Hyland which have been classified as leukemia, and during the entire period of their observation the highest white count recorded in any case was 8,600. All of the cases were characterized by glandular enlargement. All, throughout their course, showed a severe anemia in which transfusions were of only temporary value. All were characterized by fever, and two of the patients had severe pain throughout the illness. In one case, hemorrhage from the gums was a prominent feature and in another bleeding was rather severe after antrum puncture. In one case, the parent associated the inception of the condition with a previous appendectomy, and in another instance with the administration of toxin-antitoxin. The high percentage of lymphocytes in all cases was striking.

Scarlet Fever Toxoid.—One hundred and seventy-six institutional children ranging in age from 4 to 16 years were given the Dick test by McMahon. Of this number, fifty-five, a trifle less than 30 per cent, gave positive reactions. These fifty-five patients were given the first inoculation, consisting of 0.5 cc. of scarlet fever toxoid, on April 15. On May 6, they were given the second inoculation of 1 cc. and on May 31 the third and final dose of 1.5 cc. August 15, these children received another Dick test, and to be certain that they had not been sensitized by the three injections of toxoid, McMahon incorporated a test with diluted toxoid: 1:1,500 of the same concentration, approximately, as was used in the toxin to make up the Dick test. The final reading showed three persons with positive reactions less than 5 mm. and four with positive reactions as high as 10 mm. One gave a pronounced positive reaction with both the Dick test and the diluted toxoid. Consequently, there were only four positive reactions in fifty-five cases, or approximately 72 per cent of immunization. Toxoid has, in his opinion, certain advantages. In the first place, three injections are required as against five for toxin. There is no danger of sensitization to horse serum. The reactions are of no great consequence. The percentage of negative Dick skin reactions compares favorably with that of other methods. The increase of diphtheria toxoid gives an indication of the favorable results obtained from this method of immunization.

Thumb Sucking Apparatus.—The apparatus devised by Anderson is made of aluminum wire, three-sixteenths inch in diameter, according to measurements of the infant's arms. It has advantages over the common paper cuff in that it is light, cool, more durable and easily sterilized. It is inexpensive and can be easily made in a short while.

New Method for Determination of Basal Metabolism of Babies and of Small Children.—Many of the fundamental features of the Benedict and Talbot method are retained by Higgins and Bates in the method devised by them, but instead of the observation requiring two or three hours, it takes from two to four minutes for a single test and from twenty-five to forty-five minutes for the whole study of the child. The apparatus used is described and details of the method are given.

Celiac Disease.—The successful feeding of four children with celiac disease is reported by Nelson. Adequate utilization of food was demonstrated by normal growth, arrest of dental caries and the results obtained from metabolic studies. Protein milk was found to be inadequate because of the increased fat and calcium output. Proteins such as boiled skimmed milk, cottage cheese, egg white and sieved liver were well tolerated. The enzyme theory concerning the efficacy of the banana was not substantiated. Whatever value the banana has in the treatment of celiac disease apparently is dependent on the availability of the sugar; this is probably due, in part at least, to the softness of the cellulose. When given between meals, dextrose was tolerated in relatively large amounts and permitted an adequate energy intake.

Internal Hemorrhagic Pachymeningitis in Young Children.—Six cases of internal hemorrhagic pachymeningitis in infants are reported by Hunt. These cases show the appearance of sequelae as late as three or four years after the initial lesion. Following the acute, early symptoms, which may be severe enough to cause death, there is a quiescent period. During this time there may be regression or, at the best, a cessation of mental and physical development. This is followed by a period of rapid, almost phenomenal progress, but still later the sequelae appear. The sequelae observed in these cases were hydrocephalus, mental retardation, visionary defects, muscular weakness causing chiefly deformities of the lower extremities, disturbances of the bladder and behavior problems.

Interpretation of Roentgenograms of Chest in Children.—The lungs of 171 children coming to necropsy were studied by Bigler to determine what pathologic changes were present to account for the observations in roentgenograms of the chest. The incidence and mortality of bronchopneumonia are higher than those of lobar pneumonia. Pleural adhesions are found pathologically more frequently than in the roentgenograms. In simple empyema, there is never a change in the fluid level with a change in the position of the patient. In an early stage, when fluid is accumulating in the pleural cavity, a definite shadow can be seen demarcating it from the lung which it floats. Pneumothorax and pyopneumothorax are not rare in children, and their presence does not mean a fatal termination. In all cases coming to necropsy, a connection with a bronchus was found. They occur frequently from pleural puncture, both diagnostic and therapeutic. Metastatic malignant involvement of the mediastinal lymph nodes is not rare, and casts a characteristic type of bulging shadow with smooth borders.

Blood Diphtheria Antitoxin Studies.—A simple, economical and accurate method of determining small amounts of blood antitoxin is described by Flood. The blood of a group of children with positive and negative Schick reactions was titrated for antitoxin, with the result that 46.6 per cent of the children giving a negative Schick reaction did not have $\frac{1}{50}$ unit of antitoxin. In a group of children giving a positive Schick reaction, repeated titrations were done; the subjects were found to acquire $\frac{1}{80}$ units of blood antitoxin between the third and fourth month. In a group of children giving a negative Schick reaction, similar titrations were done on all who possessed at least $\frac{1}{80}$ unit of antitoxin; they were found to respond even more readily than the preceding group, a fact which suggests that the antigen value is in the toxoid and not in the free toxin of the toxin-antitoxin mixture. Young adults respond more rapidly than children and acquire a higher titer. Children who have been true carriers are resistant to injections and build up their antitoxin extremely slowly.

Congenital Complete Heart Block.—A case is reported by Leech of a patient with congenital complete heart block and an associated patent ductus arteriosus. This patient presented no symptoms suggestive of complete heart block but showed physical signs which, lacking the roentgenographic evidence, could be said to be characteristic of patent ductus arteriosus. The marked excitability of the idioventricular focus of activity in this case is discussed, and it is suggested that such patients may be readily overlooked. The type of defect producing the block is discussed, and evidence is offered which suggests that congenital heart block is almost invariably due to a lesion sufficiently high above the bifurcation of the bundle of His to allow the production of normal ventricular complexes in the electrocardiogram. There is no strong evidence to indicate that this lesion is usually a defect in the interventricular septum. Study of the published electrocardiograms in cases of congenital heart block fails to reveal the production by the presumed associated septal defects of a characteristic electrical axis deviation. It is suggested that clinicians make a special effort to obtain necropsies on the bodies of patients presenting congenital heart block.

Cirrhosis of Liver in Childhood.—The thirteenth American case of nonalcoholic primary atrophic cirrhosis of the liver in a child, aged 10, is reported by Sutton. A warning is given concerning the easy confusion of primary cirrhosis with Banti's disease in relation to the question of splenectomy. The onset of the disease with such a disturbance as catarrhal jaundice and the occurrence of large spider angiomas of the skin in association with cirrhosis are emphasized.

Hemolytic Streptococcic Septicemia.—A case of acute hemolytic streptococcic septicemia following a mastoidectomy is reported by Roller, in which blood transfusions, antistreptococcic serum and intensive supportive measures were used, with complete recovery.

American J. Medical Sciences, Philadelphia

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Alterations in Volume of Normal Spleen and Significance. J. Barcroft, Cambridge, England.—p. 1.
*Agranulocytic Blood Picture in Conditions Other Than Angina. G. Blumer, New Haven, Conn.—p. 11.
*Angina Pectoris: Is It Always Due to Coronary Artery Disease? T. McCrae, Philadelphia.—p. 16.
*Involvement of Coronary Arteries in Rheumatic Fever. S. R. Slater, New York.—p. 22.
Changing Clinical Picture of Lesions of Breast. J. C. Bloodgood, Baltimore.—p. 27.
*Secondary Anemia in Pregnancy and in Puerperium. P. B. Bland and L. Goldstein, Philadelphia.—p. 48.
*Anemia of New-Born. R. M. Greenthal, Milwaukee.—p. 66.
Eczema Problem. J. H. Stokes, Philadelphia.—p. 69.
*Meningococcus Meningitis. M. P. Borovsky, Chicago.—p. 82.
*Large Bowel in Chronic Arthritis. A. A. Fletcher and D. Graham, Toronto, Canada.—p. 91.
*Use of Dextrose in Pneumonia. W. W. G. MacLachlan, G. J. Kastlin and R. Lynch, Pittsburgh.—p. 93.
Pathogenesis and Transmission of Tuberculosis. E. L. Opie, Philadelphia.—p. 104.

Agranulocytic Blood Picture in Conditions Other than Angina.—Blumer shows that there are cases of local and general sepsis with an agranulocytic blood picture, aside from the well recognized group of agranulocytic anginas. It is not yet clear whether the sepsis or the loss of power of the bone marrow to form granulocytes is the primary lesion. Such cases cannot be differentiated clinically from acute aleukemic lymphatic leukemia with terminal infectious processes. In some instances it may be difficult to differentiate them from aplastic anemia with terminal infection. Blumer has seen four such cases. One, which came to necropsy, is reported in detail.

Is Angina Pectoris Always Due to Coronary Artery Disease?—Because angina pectoris is a clinical syndrome with no definitely recognized pathologic manifestation, and as such its limits are difficult to state, McCrae feels that there may be doubt as to whether a given case should be so designated. It should be clearly distinguished from acute coronary artery occlusion which has a definite pathologic basis. The statement, frequently made, that angina pectoris is always due to coronary artery disease does not seem to be supported by the evidence. The same may be said of the view that it is always due to a "tired heart muscle." There are probably several factors which may be operative in causing an attack, in the aorta, in the coronary arteries and myocardium and in the nervous system. McCrae believes that it is doubtful whether disease of any one structure can explain all cases.

Involvement of Coronary Arteries in Rheumatic Fever.—A case of thrombosis of the coronary artery due to rheumatic disease with characteristic electrocardiographic tracings is reported by Slater. The electrocardiogram showed the conditions recognized as occurring in closure of a large branch of the coronary artery. In this case there had been a rheumatic involvement of the myocardium for six months prior to admission during which involvement of the wall of a large branch of the coronary occurred. Suddenly thrombosis of this vessel occurred, giving rise to the picture of intense angina.

Secondary Anemia in Pregnancy and in Puerperium.—Of 200 ward maternity patients examined by Bland and Goldstein, one half exhibited a definite anemia during pregnancy, with red cell counts below 3.5 million per cubic millimeter. Of 100 private patients at term, 26 per cent had counts below 3.5 million. It was found that 126 (42 per cent) of the entire group of 300 gravid women studied, regardless of the time of examination, gave counts below 3.5 million cells. It was found that 82 per cent of the 200 ward patients and 62 per cent of the 100 private maternity patients showed hemoglobin of 74 per cent or less. The severity of the anemia is apparently not affected by parity, age or blood pressure. No conclusive evidence was discovered to confirm or disprove the contention of other authors that improvement occurs at term. In a study of thirty-five patients in whom two blood determinations were made during pregnancy, the authors found in fourteen a gain of 200,000 cells or more and a reduction of the same number of cells in fourteen others. Several etiologic factors, including ill health, foci of infection, toxemia and syphilis, were investigated, but the extent of their influence was not sufficient to be determined. The most interesting fact disclosed by this study was the remarkable and rapid recovery occurring in a large number of women within a few days after delivery. It was found that thirty-four of forty-eight women (71 per cent) having red cell counts below 3.5 million in the last trimester of pregnancy gained more than 200,000 cells per cubic millimeter within ten days after delivery. Of twenty-three patients definitely anemic during pregnancy, twenty were observed to have recovered almost completely in six months after delivery. The large percentage of private patients with anemia indicates that environmental circumstances alone were not responsible for the anemia. The etiology of the anemia of pregnancy remains undisclosed.

Anemia of New-Born.—Greenthal adds one case to the six cases already reported. It would seem that anemia of the newborn is a definite clinical entity, as evidenced by the similar blood picture in all the reported cases, the good prognosis and the permanent improvement after the infant reaches the second half of the first year. The true etiology is probably to be found in some temporary defect in the blood-forming tissue of the infant, but this is only conjecture. The recovery of infants with this type of anemia is usually complete in a few months. Only one case has proved fatal and here necropsy failed to reveal the cause of the disease. Anemia of the new-born is similar to hemorrhagic disease of the new-born in that the blood defect in each disease is temporary and recovery may occur without treatment. Blood transfusion is the treatment of choice and in his patient produced an immediate cure.

Meningococcus Meningitis.—Borovsky analyzes 190 cases. The analysis includes a report of multiple cases in one family, the average stay in the hospital of patients who recovered, the age frequency, the mortality according to age, the clinical picture, the day of illness that treatment was instituted and the type and rationale of treatment employed, the complications with relation to their frequency and prognostic value, the spinal fluid observations, the cisterna puncture results, and the reports of reexaminations made months after the patient's discharge from the hospital. The occurrence of deafness two and a half and three months after discharge from the hospital deserves special emphasis. Finally, the absence of meningeal symptoms in infants and the apparent futility of intravenous serum therapy are noted.

Large Bowel in Chronic Arthritis.—Fletcher and Graham report on the incidence of abnormal variations in the shape and size of the colon in chronic arthritis and the changes which may take place while the patient is under dietetic treatment. In sixty cases of chronic arthritis the large bowel was examined by roentgen ray following a barium enema, and changes which were considered abnormal were observed in 65 per cent of these cases. The roentgenogram shows changes in tone, haustral markings and length. Atony is sometimes seen throughout the entire colon, or more frequently it is confined to the cecum, where it may be extreme. Haustral markings, in the atonic areas, are usually absent or much decreased, and this decrease in haustration may extend throughout the large bowel. The length of the colon may be so increased as to result in change of shape or even extensive looping and redundancy. The roentgenogram has been studied from time to time while the patient has been on a dietetic treatment, and it has been found that the colon assumes a more normal appearance. Most effective results have been observed with the use of diets high in vitamin and low in carbohydrate. The antineuritic vitamin has been given freely in the form of baker's yeast or wheat germ. As a rule, the calories were restricted to some extent. These observations are offered to support the belief that nutrition and chronic arthritis are related.

Use of Dextrose in Pneumonia.—MacLachlan et al. report favorably on the use of dextrose in the treatment of pneumonia. From 400 to 600 Gm. of dextrose is given by mouth daily. The most practical method of accomplishing this is to dissolve 200 Gm. of dextrose in 1,000 cc. of water, to which is added the juice of two or three lemons. The liter thus contains 800

calories. It is palatable, and the patient is urged to drink from 2 to 3 liters each twenty-four hours (1,600 to 2,400 calories). It is given frequently in small quantities during the time the patient is awake. If too sweet for the patient, more water may be added. All cases are treated in this way from the earliest time possible. At times, patients seem to be quite unable to take the dextrose lemonade on account of the nausea and vomiting which is occasionally seen early in the disease, and also after taking large amounts for several days the stomach becomes irritable and further ingestion is difficult. When it is impossible to give dextrose by mouth in a sufficient amount or when the patient appears to be toxic, a 25 per cent solution of dextrose is given intravenously from four to six times each twenty-four hours. The quantity injected never exceeds 200 cc. at one time. It must be given slowly, at least one-half hour being allowed for the injection. By this method from 800 to 1,200 calories can be given daily, in addition to a similar number by mouth, if possible. It is most important that increasing toxicity, even when the patient is taking dextrose satisfactorily by mouth, be met in this way as early as possible. As with any drug or serum, a sufficient dosage is essential for therapeutic effect. Adequate dextrose treatment consists in giving at least 400 Gm. of dextrose by mouth a day, or, when given intravenously, at least 200 Gm. (50 Gm. four times a day). It is the total caloric intake that counts, whether by mouth or by vein, and the closer one gets to 2,400 calories a day, the better. The authors are inclined to feel that the main value in dextrose is in the additional freely available calories of carbohydrate.

American J. Public Health, New York

20: 1-117 (Jan.) 1930

Cultures of Monilia Isolated from Sputum. R. Gilbert and W. M. Groesbeck, Albany, N. Y.—p. 1.
*Need for Cancer Morbidity Statistics. F. C. Wood, New York.—p. 11.
Duties of Nursing Staff in Health Department Communicable Disease Service. A. J. Martin, Syracuse, N. Y.—p. 21.
Administrative Significance of Proposed Changes in Standard Methods of Water Analysis. J. F. Norton, Detroit.—p. 27.
Seasonal and Age Studies of Poliomyelitis and What They Suggest. W. L. Aycock, Burlington, Vt.—p. 41.

Need for Cancer Morbidity Statistics.—Wood favors making cancer a notifiable disease. It would stimulate the physician to early diagnosis, as he would be later checked up by some one else if he failed to diagnose the tumor promptly. Such an official record would encourage the patient to make use of the best treatment and would do a good deal to inhibit the activities of the quack, who would be exposed to publicity through the premature death of his patient. This partial control of the patient's activities through the state or local boards of health is one of the most important collateral effects of such notification. The compulsory registration of all cases of cancer would be a check on the death certificates which are now frequently signed "heart disease" or "pneumonia" in deference to the family's wishes. When such notification becomes fairly widespread, invaluable records of the rate of growth of tumors and the length of life of the patients (which are not synonymous) will be obtained. It is not too much to hope that within two decades it would be possible to have a still more complete record of the types of cancer that offer a reasonable chance of cure; in fact, microscopic slides from such patients, or a photomicrograph from such a slide, would be a part of the death certificate.

Delaware State M. Journal, Wilmington

1: 215-236 (Dec.) 1929

Delaware State Medical Society and Founders in Eighteenth Century. L. P. Bush, Wilmington.—p. 215.
Agranulocytic Angina. L. B. Flinn, Wilmington.—p. 226.
Diagnosis, Treatment and Management of Eclampsia as Met in General Practice. U. W. Hocker, Lewes.—p. 227.

Indiana State M. Assn. Journal, Fort Wayne

22: 507-552 (Dec. 15) 1929

Unsolved Problems of Ophthalmology and Otolaryngology. J. A. Stucky, Lexington, Ky.—p. 507.
Major Infections of Hand. S. L. Koch, Chicago.—p. 510.
First Stage of Labor. H. F. Beckman, Indianapolis.—p. 517.
Immunization Against Diphtheria. S. Thompson, Gary.—p. 522.

Journal of Exper. Medicine, Baltimore

51: 1-178 (Jan. 1) 1930

*Intradermal Immunization of Monkeys with One Set of Injections of Poliomyelitis Virus. C. P. Rhoads, Baltimore.—p. 1.
*Rôle of Reticulo-Endothelial System in Immunity: VI. Effect of Endothelial Blockade on Storage and Distribution of Neoarsphenamine. C. W. Jungeblut and B. R. McGinn, San Francisco.—p. 5.
Id.: VII. Effect of Local and Systemic Blockade on Toxic Action of Heterophil (Forssman) Serums in Guinea-Pigs. C. W. Jungeblut and G. Newnan, San Francisco.—p. 15.
*Effect of Roentgen Ray on Nodules of Verruga Peruana. H. R. Muller and J. R. Tyler, Baltimore.—p. 23.
Is Local Vasodilatation After Different Tissue Injuries Referable to Single Cause? P. Rous and H. P. Gilding, Baltimore.—p. 27.
Apparatus for Study of Respiratory Quotient and Basal Metabolism of Mice. A. H. Ebeling and R. B. Corey, Baltimore.—p. 41.
Effect of Unilateral Nephrectomy on Senile Atrophy of Kidney in White Rat. R. A. Moore and L. M. Hellman, New Haven, Conn.—p. 51.
Isolation, Cultivation and Classification of So-Called Intracellular Symbiont or Rickettsia of Periplaneta Americana. R. W. Glaser, Princeton, N. J.—p. 59.
Blood Cytology of Rabbit: I. Blood Counts in Normal Rabbits. L. Pearce and A. E. Casey, Baltimore.—p. 83.
Transformation of Pneumococcal Types: I. Conversion of R Forms of Pneumococcus into S Forms of Homologous Type. M. H. Dawson, Baltimore.—p. 99.
Id.: II. Interconvertibility of Type-Specific S Pneumococci. M. H. Dawson, Baltimore.—p. 123.
Survival of Vaccine Virus Separated from Living Host Cells by Collodion Membranes. R. S. Muckenfuss and T. M. Rivers, Baltimore.—p. 149.
Comparison of Method of Excretion of Neutral Red and Phenol Red by Mammalian Kidney. E. MacKay and J. Oliver, San Francisco.—p. 161.

Intradermal Immunization of Monkeys with One Set of Injections of Poliomyelitis Virus.—By means of a single large dose of poliomyelitis virus, distributed at a number of intradermal sites, active immunity has been produced by Rhoads in *Macacus rhesus* monkeys, as shown by skin neutralization and intracisternal tests. In a series of four monkeys so treated, neither abortive nor paralytic signs of experimental poliomyelitis appeared.

Effect of Endothelial Blockade on Storage and Distribution of Neoarsphenamine.—Jungeblut and McGinn agree with other authors that blockade of the reticulo-endothelial system leads to a slower elimination of "storable" colloids from the blood stream and consequently to a less complete inpregnation of the reticulo-endothelial cells with these substances. Blockade of the reticulo-endothelial system by means of a single injection of india ink caused a marked retention of neoarsphenamine in the blood of guinea-pigs during the first twenty minutes of observation after intravenous injection, as contrasted with the rapid disappearance of the drug from the blood of normal controls. Rabbits blocked by a single dose of india ink showed a slower elimination of the drug from the circulation during the first few hours after intravenous injection than corresponding controls. The arsenic content of the livers of mice which received neoarsphenamine intravenously after a preceding blocking injection with india ink was appreciably lower than the arsenic content of the normal organ under similar experimental conditions.

Effect of Roentgen Ray on Nodules of Verruga Peruana.—The supposition that the roentgen ray would affect the developing and the developed verruga nodules experimentally induced in the monkey has been proved correct by Muller and Tyler. The experiments show that the early verruga nodules when exposed to a single, properly graduated dose of roentgen rays producing merely erythema of the skin are inhibited in their evolution. Moreover, the skin of *Macacus rhesus* monkeys is modified by a single erythema dose of roentgen rays in such a way that infection of it with *Bartonella bacilliformis* is rendered more difficult. These results are sufficiently striking to warrant the trial of roentgen rays in suitably guarded doses in the treatment of verruga nodules in man.

Kentucky M. Journal, Bowling Green

27: 539-598 (Dec.) 1929

Public's Obligation to Medical Profession. E. L. Gowdy, Campbellsville.—p. 541.
History of Orthopedic Surgery. W. B. Owen, Louisville.—p. 548.
Etiology and Symptomatology of Scarlet Fever. T. J. Marshall, Paducah.—p. 554.
Diagnosis and Treatment of Scarlet Fever. C. M. McKinlay, Lexington.—p. 556.
Ear Complications in Scarlet Fever. J. R. Peabody, Louisville.—p. 561.

Practical Demonstration for Control of Scarlet Fever. J. L. Jones, Louisville.—p. 564.
Justice for Insane! Are the Hospitals for Insane in Kentucky Mere Custodial Institutions? F. G. LeRue, Lexington.—p. 573.
Intestinal Obstruction. M. D. Garred, Ashland.—p. 576.
Chronic Prostatitis: Etiology, Symptomatology and Treatment. J. W. Visher, Evansville, Ind.—p. 577.

Public Health Reports, Washington, D. C.

44: 3169-3224 (Dec. 27) 1929

National Leper Home (United States Marine Hospital), Carville, La. O. E. Denney.—p. 3169.
Report on International Conference for Promotion of Infant Welfare Held at Stockholm, Sweden, Sept. 19 to 24, 1929. E. A. Sweet.—p. 3177.

45: 1-60 (Jan. 3) 1930

Apportionment of Financial Aid for County Health Work. E. Sibley and J. W. Mountin.—p. 1.

Rhode Island M. Journal, Providence

13: 1-14 (Jan.) 1930

Present-Day Interpretation of Basal Metabolism. G. W. Wells, Providence.—p. 1.
Psychoanalysis. S. Starr, Providence.—p. 5.

Surgery, Gynecology & Obstetrics, Chicago

50: 1-128 (Jan.) 1930

*Morphologic Similarity of Certain Luteal Cysts and Endometriosis of Ovary. E. S. J. King, Melbourne, Australia.—p. 1.
*Formes Frustes Type of Perforated Peptic Ulcer. H. A. Singer and R. T. Vaughan, Chicago.—p. 10.
Primary Carcinoma of Ureter: Case and Review of Literature. L. M. Rousselot, New York, and J. D. Lamon, Macon, Ga.—p. 17.
*Right Paraduodenal Hernia and Isolated Hyperplastic Tuberculous Obstruction. J. C. Masson and A. H. McIndoe, Rochester, Minn.—p. 29.
Effect of Cholecystenterostomy of Biliary Tract. Gatewood and S. E. Lawton, Chicago.—p. 40.
Postoperative Pulmonary Atelectasis: Unusual Case. R. H. Overholt, E. P. Pendergrass and S. S. Leopold, Philadelphia.—p. 45.
Cholelithiasis in Korean. A. I. Ludlow, Seoul, Chosen (Korea).—p. 51.
Duodenal and Gastric Ulcer, Cholecystitis and Appendicitis: Consideration of Pathologic Relations. J. W. Larimore, St. Louis.—p. 59.
Left Partial Colectomy. D. Chamberlain, Leeds, England.—p. 65.
*Technic of Voelcker Extraperitonealization of Urinary Bladder. H. Sugar, Los Angeles.—p. 69.
Alcohol Injections for Postoperative Pain in Thoracic Surgery. G. Labat, New York.—p. 74.
Micromelia in Child Irradiated in Utero. D. P. Murphy and L. Goldstein, Philadelphia.—p. 79.
*Liposarcoma of Mammary Gland. R. A. Lifvendahl, Chicago.—p. 81.
Sacrococcygeal Teratomata with Malignant Degeneration in Childhood. J. D. Stewart, N. M. Alter and J. D. Craig, New York.—p. 85.
Bifurcation Operation of Lorenz. W. I. Galland, New York.—p. 90.
Extension Frame for Reduction of Fracture of Vertebral Body. W. A. Rogers, Boston.—p. 101.
Ruptured Urethra Operation. G. G. Davis, Chicago.—p. 105.
Stones in Ureter. H. C. Bumpus, Jr., and G. J. Thompson, Rochester, Minn.—p. 106.
Radium Therapy in Treatment of Cancer of Vulva. I. de Büben, Budapest, Hungary.—p. 110.
Present-Day Treatment of Placenta Praevia. J. P. Greenhill, Chicago.—p. 113.

Morphologic Similarity of Luteal Cysts and Endometriosis of Ovary.—King finds that endometrial cysts of the ovary and tarry luteal cysts possess many features in common. They are indistinguishable macroscopically. Microscopically, diagnosis requires careful study, since (1) the epithelium in the two cases may be similar; (2) the subjacent stroma in the luteal cyst may closely resemble that of endometrial glands; (3) gland spaces may be seen in both; (4) pseudoxanthomatous cells occur in both; (5) the characteristic structure of the luteal cyst may not be apparent in all parts of the wall, so that a thorough study in doubtful cases is essential. Their similarity extends to their physiology and complications. Tarry luteal cysts sometimes rupture into the peritoneal cavity and in this way produce secondary blood cysts and a severe inflammatory reaction similar to that produced by "endometrial" cysts.

Formes Frustes Type of Perforated Peptic Ulcer.—In a number of formes frustes cases Singer and Vaughan have succeeded with the aid of the fluoroscope in demonstrating free intraperitoneal air which could be made to shift to all parts of the abdomen on change of the patient's position. In most of these cases for one reason or another operation was not performed, but the antecedent history of ulcer, the acute onset with symptoms and signs of upper abdominal peritonitis, the subsequent barium meal examination, and the clinical course rendered it clear that a perforated peptic ulcer was the cause of the pneumoperitoneum. These patients recovered spontaneously in spite of the free perforations. Even more convincing than the demonstration of free air is the fact that in a number of cases in which operation was performed no perigastric sac or adhesions which appeared older than the perforation could be discovered. In some of these cases, although gastric contents were found lying remote from the region of the stomach and the perforation was left unsutured because already covered over or sealed, the patients went on to a recovery.

Right Paraduodenal Hernia and Isolated Hyperplastic Tuberculous Obstruction.—Masson and McIndoe report a case of right paraduodenal hernia in association with marked obstruction of the herniated small intestine due to an isolated tumor resembling carcinoma but of hyperplastic tuberculous origin. This is the thirty-third example of right paraduodenal hernia reported, the sixteenth patient with this condition to be operated on, and the fifth to recover following operation. Isolated hyperplastic tuberculosis of the small intestine is rare; only seven cases have been reported. The two lesions in association make the case unique. The presence of tuberculosis in the hernial sac is interpreted as being due to stagnation of food and to the slowing of the intestinal current in the sac. The conditions were thus similar to those under which the same type of tuberculosis occurs in the cecum.

Technic of Voelcker Extraperitonealization of Urinary Bladder.—The essence of the Voelcker operation as described by Sugar consists in the primary excision of the adherent section of peritoneal fold from the bladder vertex and in the careful and exact suturing of the peritoneal slit. The lateral and posterior walls of the bladder are then bluntly mobilized. With this modification, the suprapubic bladder exposure makes possible any extensive resection of the bladder which may be necessary.

Liposarcoma of Mammary Gland.—In the case of a liposarcoma reported by Lifvendahl, the tumor was located in the mammary gland and occurred during the period of lactation in a woman 41 years of age. The neoplasm is unusually malignant in a lactating breast, both locally and by means of metastases. Additional evidence is submitted favoring the theory that the embryonic fat cell is derived from the undifferentiated mesenchymal cell. Although a considerable amount of the mammary gland was replaced by the tumors, the function of secreting milk was still maintained.

U. S. Veterans' Bureau M. Bull., Washington, D. C.

6: 1-85 (Jan.) 1930

Danger of Tuberculous Infection in Hospitals and Sanatoriums. E. R. Baldwin.—p. 1.
Subacute Bacterial Endocarditis or Streptococcus Viridans Septicemia. M. T. Moorehead.—p. 5.
Neuropsychiatry and Association of Neuropsychiatrists in Russia. M. K. Amdur.—p. 10.
Personal Experience with Fascia Lata as Reparative Agent. G. E. Pfeiffer.—p. 15.
Sinusitis Complicating Pulmonary Disease: Cases. R. C. Buck.—p. 19.
*Angina Pectoris Associated with Myxedema Heart. T. Ziskin.—p. 24.
Gerson-Sauerbruch Dietetic Regimen in Tuberculosis. P. B. Matz.—p. 27.
History and Physical Examination in Diagnosis of Heart Disease. G. H. Parmenter.—p. 33.
Toxicology of Mercury. B. A. Warren.—p. 39.
Relationship of Teeth to Facial Neuralgia and Headache. E. C. Kettner.—p. 46.
Eye as Portal of Infection. W. C. Deming.—p. 50.
*After-Results of Cholecystectomy. H. G. Shelley.—p. 52.
Comparison of Results of Wassermann Test with Precipitation Tests of Meinicke and Kline. M. Russell.—p. 54.
Cystic Tumor of Third Ventricle. G. B. Hassin and J. B. Anderson.—p. 56.
Acute Purpura Hemorrhagica Following Administration of Sulpharsphenamine with Recovery. L. W. Day.—p. 62.
Thoracic Stomach. C. G. Lyons.—p. 65.
Laryngeal Tuberculosis Treated with Reflected Sunlight. M. C. Ryan.—p. 73.

Angina Pectoris Associated with Myxedema Heart.—In the case reported by Ziskin thyroid extract, 3 Gm. a day, caused complete disappearance of the anginal attacks. He warns that the administration of thyroid in these cases must be done gradually and with caution. Too much work should not be thrown on the heart at one time. The proper mainte-

nance dose must be determined in each case and the patient kept at this level at all times. If this is done it is believed that thyroid may be safely given to these patients without fear of aggravating their condition.

After-Results of Cholecystectomy.—On the basis of an analysis of ten cases of cholecystectomy in all of which there was a return of symptoms, Shelley concludes that the gallbladder in itself has a definite function in digestion and that serious gastric disturbances are to be expected in all cases following cholecystectomy. It is therefore evident that cholecystotomy is the preferable operation.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

2: 1293-1344 (Dec. 21) 1929

Crystal Structure of Organic Substance in Relation to Medicine. W. Bragg.—p. 1293.
*Etiology and Prophylaxis of Postanesthetic Sickness. J. R. MacKenzie.—p. 1299.
*Tuberculous Polyserositis with Predominant Pericardial Involvement. L. S. T. Burrell, D. C. Hare and J. M. Ross.—p. 1303.
*Bread or Toast for Diabetics? R. D. Lawrence.—p. 1305.
*Effect of Ultraviolet Radiation on Incidence of Tar Cancer in Mice. A. C. Kohn-Speyer.—p. 1305.

Etiology and Prophylaxis of Postanesthetic Sickness.—MacKenzie suggests that the surgical patient should come under the preanesthetic supervision of the anesthetist at the earliest moment after reaching the hospital and should remain under his supervision until the danger of postanesthetic sequelae has passed. Purgation and enemas should be given only on the express instruction of the surgeon and in ordinary cases never within forty-eight hours of the operation. Starvation should not include more than one meal before operation. It is very important to maintain a high glycogen content of the liver and muscles; to accomplish this food rich in carbohydrate not only should be continued until within a few hours of operation but should be given at the earliest possible moment after, in the form of orange juice, sweetened water or tea, or dextrose with pancreatin. It is essential that the patient be encouraged in this course. The author doubts whether there is any justification for giving insulin in routine cases except in conjunction with intravenous injections of dextrose saline solution. Stomach lavage before and after the anesthetic is a procedure which in his experience has considerable merit and deserves to be more extensively practiced. Physiologic solution of sodium chloride with from 10 to 20 per cent dextrose is excellent for the purpose, and a few ounces of the fluid should be left in the stomach after each lavage. Intravenous hypertonic saline solution has been used after critical operations, in many cases with most brilliant results, including the absence of any postanesthetic sickness. Anoxemia should be carefully avoided throughout the operation by supplying oxygen, and deetherization practiced by hyperventilation with carbon dioxide. MacKenzie has found dextrose, 1 ounce (30 Gm.), acetylsalicylic acid, 20 grains (1.3 Gm.), and potassium bromide, 1 drachm (4 Gm.), in half a pint (250 cc.) of water by rectum as soon as the patient returns to bed valuable. He also gives small doses of pituitary extract (0.25 cc.)—one dose before the patient leaves the operating room and repeated at intervals of one hour—with what appeared to be considerable success.

Tuberculous Polyserositis with Predominant Pericardial Involvement.—On the evidence afforded by their case, Burrell et al. conclude that chronic tuberculosis of the great serous sacs progressing to the production of "polyserositis" is a condition associated with a high degree of immunity to the infection, and that in chronic cases the infective element is slowly submerged as the clinical picture becomes one of mechanical obstruction to the heart and circulation.

Bread or Toast for Diabetic Patients?—The hyperglycemic effect of bread has been compared by Lawrence with that of an equal amount of bread thoroughly toasted and no appreciable difference has been observed in two mild cases of diabetes. He feels that one may reasonably infer that, weight for weight, toast is worse tolerated than bread because it contains more carbohydrate.

Effect of Ultraviolet Radiation on Incidence of Tar Cancer in Mice.—Under the conditions of her experiment, the irradiating of mice with ultraviolet rays as an adjunct to tarring was not found by Kohn-Speyer to produce warts more quickly than tarring alone.

Bulletins et Mém. de la Soc. des Chirurgiens de Paris

21: 637-672 (Nov. 5) 1929

Roentgen Control in Reduction of Fractures of Leg. P. Aubourg.—p. 638.
Surgical Tuberculosis: Treatment. R. Massart.—p. 643.
Late Neuralgia of Ulnar Nerve Due to Fracture of Elbow. H. Judet.—p. 651.
Fracture of Tarsal Scaphoid. Rœderer.—p. 654.
*Gastro-Enterostomy for Cicatricial Stenosis of Pyloric Ulcer: Jejunojejunostomy Twenty-Three Years Later. Thévenard.—p. 658.
Fracture of Both Femurs: Osteosynthesis. P. Muller.—p. 661.
*Hydatid Cyst of Lung with Penetration of Thoracic Wall. E. Bressot and R. Chureau.—p. 666.
Amebic Abscess of Lung. C. Nicolas.—p. 669.
Angiomatous Intra-Uterine Phlebectasia. S. Tsakona.—p. 670.

Gastro-Enterostomy for Cicatricial Stenosis of Pyloric Ulcer: Jejunojejunostomy Twenty-Three Years Later.—Thévenard's patient had been operated on when 33 years of age for stenosis of the pylorus caused by cicatrization of an ulcer. For nineteen years his condition had been satisfactory; then gradually abdominal pain caused increasing discomfort after every meal. On roentgen examination spasms with apparent complete evacuation by way of the anastomosis were noted. At the time the patient refused a surgical intervention. However, his condition had become worse and four years later necessitated surgical intervention. This disclosed constriction of the duodenum by a circular cicatrix with an extension of tissue drawing it toward the mesentery. There were no other adhesions nor any pathologic lesions. Jejunojejunostomy of the intestinal loop above and below the stricture was done. Recovery was rapidly effected and the patient's condition five months after the operation was reported satisfactory.

Hydatid Cyst of Lung with Penetration of Thoracic Wall.—This rare occurrence is reported by Bressot and Chureau in a woman, aged 26. She had been suffering from pain in her back for seven months. Examination did not disclose any disorder of the respiratory tract, but on the left side of her back a tumor was noted. The diagnosis of a cold abscess was made. On puncture, however, fluid characteristic of an hydatid cyst was withdrawn. This diagnosis was confirmed by roentgen examination. Partial resection of the seventh rib was done one week later with drainage and evacuation of the cyst, which disappeared. The patient recovered.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

53: 1283-1340 (Nov. 25) 1929

Purulent Pneumococcal Meningitis of Otitic Origin. Laignel-Lavastine and Bernal.—p. 1283.
*Tetanus: Serotherapy and Chloroform Narcosis. H. Dufour.—p. 1285.
Amyloid Degeneration and Lipoid Nephrosis. M. Labbé, R. Boulin, Azerad and Justin-Besançon.—p. 1288.
*Puerperal Septicemia Caused by Clostridium Aerogenes-Capsulatum. P. Baize and M. Mayer.—p. 1294.
Cerebral Tumor: Presentation of Eight Patients Successfully Operated On. C. Vincent, M. David and P. Puech.—p. 1298.
*Duodenal Drainage in Treatment of Uremia. C. Auguste.—p. 1313.
Biliary Cirrhosis: Two Cases. N. Fiessinger, H. R. Olivier and G. Albot.—p. 1318.
Psoriasis and Psoriatic Arthropathies: Treatment with Thoron. A. Léri and J. A. Lièvre.—p. 1335.

Tetanus: Serotherapy and Chloroform Narcosis.—Dufour reports that he obtained favorable results with this treatment in a boy, aged 11, in whom tetanus developed after a slight injury to his hand. Repeated intramuscular injections of tetanus antitoxin were given five days later, but were of no avail. Difficulties were encountered in attempting intraspinal injection and therefore chloroform was administered eight days after the onset of the disease. Thirty cubic centimeters of cerebrospinal fluid was withdrawn and 28 cc. of tetanus antitoxin injected, together with intramuscular and subcutaneous injections. There were no tetanic convulsions during the night. The following day, again under chloroform narcosis, 20 cc. of tetanus antitoxin was injected intraspinally. Next day two convulsions were noted. However, after a third intraspinal injection of 30 cc. of tetanus antitoxin, the condition gradually improved. There were no further seizures and rapid recovery

ensued. Three weeks later the patient left the hospital. Dufour points out that the association of chloroform narcosis and antitoxin injections may have caused the favorable outcome. In a second patient, a man, aged 69, injections of tetanus antitoxin proved valueless. The patient was sleeping quietly after having been given 0.005 Gm. of morphine the preceding night and therefore chloroform narcosis was deemed unnecessary. Death ensued the evening after the intervention.

Puerperal Septicemia Caused by Clostridium Aerogenes-Capsulatum.—Baize and Mayer report that criminal abortion performed in a patient, aged 24, who had been pregnant six weeks, caused a rapid increase in temperature and the development the next day of severe icterus. Three days after her admission to the clinic, the icterus had receded, but the general condition was one of great weakness. A slight involvement of the right apex and symptoms of acute nephritis were noted. Little urine was excreted and it gave positive chemical reactions for blood. Almost absolute suppression was noted the following day. Anuresis coincident with severe hematemesis occurred and death ensued one week after the abortion. At necropsy, the tissues and viscera showed the typical changes of gas gangrene and all the organs contained *Clostridium aerogenes-capsulatum*. The authors point to the frequency of such infections and the importance of early antitoxin therapy, which has been used in Germany.

Duodenal Drainage in Treatment of Uremia.—In five patients observed by Auguste (one case report given), chronic nephritis with uremia and azotemia was favorably influenced by drainage of the duodenum. Compared to the normal excretion of from 60 to 70 cc. an hour with a chloride content of not more than 6 Gm. a liter (expressed as sodium chloride), as much as from 125 to 250 cc. an hour of duodenal juice was obtained with a chloride concentration up to 8 Gm. Although death ensued within several weeks in all the patients, drainage brought considerable relief of the symptoms of uremia and the headaches and loss of vision were reduced.

Paris Médical

2: 465-480 (Nov. 30) 1929

Danger of Injecting Arsphenamine Instead of Neoarsphenamine. G. Milian.—p. 465.
*Reactivation of Malaria as Guide in Prognosis. Chantriot.—p. 466.
*Vaccinotherapy in Whooping Cough. K. Kyriazidès.—p. 473.
*Thermocoagulation of Tonsils. M. Boutarel.—p. 476.

Reactivation of Malaria as Guide in Prognosis.—On the basis of his experience in eight cases Chantriot points to the effect of chemical, biologic or other pyretogenous agents in latent malaria. The principle involved may be compared to that of reactivation of syphilis by antisyphilitic treatment. However, the rise in temperature must be controlled by blood examinations as it may be due to medication. Further investigations on the value of this reaction as a test for cure are under way.

Vaccinotherapy in Whooping Cough.—The value of Kyriazidès' autovaccine, which he prepared for 113 patients, was enhanced by the fact that it afforded protection not only against the evolution of the symptoms of whooping cough but also against infections of the respiratory tract causing complications. According to his method of preparation, the vaccine was ready within sixty hours and was given by intramuscular injection. In nine cases *Hemophilus pertussis* was not found, but a strain derived from other cases was added to the vaccine. Thirty-three of the patients were children between 1 and 3 years of age, eighteen were between 5 and 8 and four were adults. In all these vaccinotherapy was used within the first week of the disease, thus during the catarrhal period or at the beginning of the convulsive stage. In twelve other children between 1 and 2 years of age, bronchopulmonary complications were noted and autovaccinotherapy was started at the end of the second week of the disease. Three children had symptoms of meningitis in the second week of the disease. In all of them favorable results were seen after vaccinotherapy. Of eighteen other children in the third week of the disease, autovaccinotherapy with an increasing number of injections was successful in ten; in the eight others, however, only the paroxysm of coughing was relieved. Heterovaccinotherapy was successful in twenty-three of twenty-five other patients.

Thermocoagulation of Tonsils.—Boutarel discusses the indications for and methods of surgical diathermy. He prefers the spherical to the needle electrode as being less drastic and more easily visible. At the same time, a continuous current is favored. Complications are rare and are usually due to coagulation of an aberrant vessel. A secondary hemorrhage may result after loss of the eschar, but with the cautious use of the cautery such accidents can be prevented.

2: 481-512 (Dec. 7) 1929

Review of Therapy of Infectious, Cardiovascular and Blood Diseases. P. Harvier.—p. 481.
*Milk and Diet for Treatment of Eczema in Infants. L. Ribadeau-Dumas, R. Mathieu and Willemin-Clog.—p. 491.
*Effect of Intravenous Injection of Hypertonic Solution of Sodium Chloride. L. Binet and S. Stoicesco.—p. 498.
Cholagogues. E. Chabrol and R. Charonnat.—p. 502.
*Contraindications to Salt-Free Diet in Nephritis. P. Delafontaine.—p. 506.

Milk and Diet for Treatment of Eczema in Infants.—Ribadeau-Dumas et al. direct attention to the importance of an analysis of the milk used in feeding infants affected with eczema. Examinations have shown that hyperproteinemia is always an associated condition with disorders of water metabolism. Treatment should therefore be directed not only to better local functioning of the tissues but also to the relief of disorders of metabolism. It was furthermore noted that breast-fed infants more often had eczema than those fed artificially. The authors state that this may be due to overfeeding or improper balance of foods causing gastro-intestinal disorders. Dyspepsia caused by excess of butter and casein in the milk has frequently been reported by various authors. Control of the mother's diet may be helpful, although, once established, eczema does not yield to dietary regulation alone.

Effect of Intravenous Injection of Hypertonic Solution of Sodium Chloride.—On the basis of their experiments on dogs, Binet and Stoicesco conclude that concentrations such as those used for therapeutic purposes are not toxic. Previously reported results in patients also demonstrate the value of repeated injections, which according to the authors should be given slowly. The concentration should run parallel to the amount of chlorides excreted by the patient, which may be from 2 to 5 Gm.

Contraindications to Salt-Free Diet in Nephritis.—Delafontaine considers more thorough examination of the kidney functioning advisable before salt-free diets are prescribed for patients with albumin in the urine. The relation between azotemia and hypochloruria may result in contraindications to such a diet in interstitial nephritis. Administration of sodium chloride may even become necessary. Delafontaine stresses the importance of continuous laboratory control of the blood and urine in such patients.

Presse Médicale, Paris

37: 1541-1556 (Nov. 27) 1929

*Neurodermatitis. R. Sabouraud.—p. 1541.
*Membranous Dysmenorrhea. G. Cotte.—p. 1542.
Statistics of Four Years of Diphtheria Toxoid Immunization. M. and G. Mozer.—p. 1543.
Suppurative Epididymitis and Funiculitis. L. Weitzel.—p. 1544.
Liposoluble Bismuth Compounds in Treatment of Syphilis. R. Mignot.—p. 1545.

Neurodermatitis.—Sabouraud discusses the etiology, localization and treatment of neurodermatitis. He considers the old terminology "circumscribed lichen" more appropriate, as it characterizes the lesion without pointing to its origin. Although this condition frequently occurs in subjects with mental depression, Sabouraud states that he invariably found *Streptococcus impetiginis* in cultures of the fluid obtained after scarification of the lesions. Of significance is the fact, according to Sabouraud, that the treatment is identical with that used in chronic impetigo of the scalp, namely, daily applications of iodized alcohol, the use of a coal tar ointment, fresh air and ultraviolet irradiation. Roentgen rays are not advised as they cause loss of hair. The duration of treatment is at least three months.

Membranous Dysmenorrhea.—Cotte contends that endometritis has falsely been held responsible for this condition. He recalls that Hitschmann and Adler have already pointed out

that menstruation does not favor the development of endometritis because the mucous membrane is renewed periodically. Normally, menstrual blood does not coagulate; this may be ascribed to the lytic action of ferments contained in the mucous membrane. Hyperplasia of the uterus, incited by ovarian dysfunction, may lead to a disturbance of the secretion in the mucous membrane, thus causing membranous dysmenorrhea. His patients, twins, aged 15, had been suffering from the disorder since the onset of menstruation, respectively, four and five years previously. The condition had become aggravated in one of the girls and an operation was performed. After spinal anesthesia, a low Pfannenstiel incision was made. The uterus was hypertrophied but pathologic lesions were not seen. Resection of 1.5 cm. of the pelvic sympathetic (presacral) nerve was performed and the cavity closed without any other intervention. The patient recovered without complications and remained considerably relieved for a period of more than one year.

Revue Médicale de la Suisse Romande, Lausanne

49: 793-856 (Nov. 25) 1929

*Cerebrospinal Tumors Permitting Diffusion of Iodized Poppy-Seed Oil: Two Cases. F. Naville, F. Ody and A. Reverdin.—p. 793.
Relation Between Erythremia and Erythema Nodosum. R. S. Mach.—p. 804.
*Prophylaxis of Gas Gangrene. E. Urech.—p. 831.

Cerebrospinal Tumors Permitting Diffusion of Iodized Poppy-Seed Oil.—Naville et al. report that in two of their cases the usual roentgen examination had not disclosed retention of the iodized oil in the region corresponding to the localization by the clinical symptoms. In their first case a tumor could not be seen on the outer side of the dura mater in spite of paraplegia having occurred six months previously and of characteristic pain in the spinal column which had indicated the intervention. The patient died and necropsy disclosed the presence of a tumor adherent to the inside of the dura mater. In the other patient, repeated roentgen control with reversal of the posture during the examination to enable the iodized oil to penetrate from the opposite direction had been done to facilitate localization of the tumor. The patient had been bedridden for ten years. She could move her legs, but pain in her back prevented her from standing. Operation showed the presence of two small tumors, the site of which did not correspond to the compression noted on roentgen examination. The authors review the literature and contend that caution in the interpretation of roentgenograms is necessary in spite of control by reversal of posture.

Prophylaxis of Gas Gangrene.—Urech reports that protection from infection with anaerobic bacilli was not effected in five of 100 patients who had received injections of from 10 to 20 cc. of anaerobic antitoxin within from one to several hours after the injury. He discusses the literature and points to the variations in virulence of the infection, concluding that equal value should be conceded to surgical and other treatment.

Policlinico, Rome

36: 1743-1782 (Dec. 2) 1929. Practical Section

*Hinton Test in Syphilis. R. Carusi.—p. 1743.
Myxochondro-Epithelioma of Parotid Gland. V. Mignani.—p. 1745.
Constitutional Hypertensions of Cerebrospinal Fluid. F. C. Da Villa.—p. 1747.

Hinton Test in Diagnosis of Syphilis.—Carusi compares this test with the Wassermann and the Sachs-Georgi tests. In his work the reactions agreed with those of the Wassermann test in 87.77 per cent of the cases. In the cases in which the Hinton and the Wassermann tests disagreed as to the result, the Hinton test showed greater sensitiveness and greater specificity than the Wassermann test.

36: 549-600 (Nov. 15) 1929. Surgical Section

*Blood Transfusion in Treatment of Surgical Infections. A. Bertocchi.—p. 549.
Osteogenic Exostosis. E. Capecchi.—p. 560.
Abnormal Arteriovenous Communications. G. Montemartini.—p. 591.

Blood Transfusion in Treatment of Surgical Infections.—Bertocchi supports the view that the transfusion of pure blood supplies the organism directly with a large amount of useful substance with which to combat an infection and thinks that repeated large transfusions (600-800 cc.) may overcome grave types of infection resistant to ordinary methods of treatment. He reports five cases of surgical infection thus treated, four of which progressed to recovery, verified by researches on the behavior of the erythrocytes and the bactericidal potency of the blood.

Riforma Medica, Naples

45: 1477-1508 (Nov. 2) 1929

*Hemolytic Splenomegaly. G. Bossa.—p. 1479.
*Ulcerative and Pseudomembranous Gastritis During Typhoid. A. Costa.—p. 1484.

Hemolytic Splenomegaly.—Bossa reports that, from his study of the modifications of the blood during roentgenotherapy of the spleen in two cases of hemolytic splenomegaly, he has reached the conclusion that irradiation of the spleen produces an increase in corpuscular resistance. Irradiation of the spleen acts in the same way as extirpation of the organ itself, though, of course, not to the same extent. Following irradiation of the spleen, he noted a slight improvement in both patients, although the fundamental symptoms of the disease still persisted. It was an interesting fact that the increase in the globular resistance coincided with the increase in the cholesterolemia induced by the irradiation of the spleen.

Ulcerative and Pseudomembranous Gastritis During Typhoid.—Costa observed some rare gastric complications (ulcerous gastritis, pseudomembranous gastritis) during typhoid. One case occurred in a patient who had eaten too early a considerable quantity of solid food. In a second case, in which a grave pseudomembranous gastritis was discovered at necropsy, there had been persistent vomiting during the last two weeks of the disease.

45: 1509-1544 (Nov. 9) 1929

*Iso-Agglutinating Potency of Conserved Human Blood Serum. P. Mino and L. Gedda.—p. 1511.
Icterohemorrhagic Spirochetosis in Province of Pavia. L. Cattaneo.—p. 1513.
Isolated Fractures of Epitrochlea and Their Surgical Treatment. G. Perrotti.—p. 1517.
Action of Pancreatic Extracts in Treatment of Angina Pectoris. H. Vaquez, R. Giroux and N. Kisthinios.—p. 1519.

Iso-Agglutinating Potency of Conserved Human Blood Serum.—Mino and Gedda, after researches on a large series of blood serums conserved for periods ranging between three and six years, found that in nearly all the cases there were present iso-agglutinins characteristic of the respective blood group. The number of iso-agglutinins was, however, notably reduced. The authors found no evidence that would support the idea of a change of blood group in these old serums. They conclude that the duration of conservation conditions essentially quantitative modifications of the agglutinating potency of blood serums, and that at least the positive data furnished by old serums of groups II and III may be accepted with full confidence.

Semana Médica, Buenos Aires

36: 1221-1300 (Oct. 31) 1929

*Statistics of One Hundred and Thirty-Five Cases of Renal and Ureteral Lithiasis. J. Salleras.—p. 1221.
Acute Intussusception in Infants: Pathologic Anatomy: Treatment. P. de Elizalde, M. Vergnolle and M. Ruiz Moreno.—p. 1230.
Resection of Stomach: Methods Commonly Used. O. Copello.—p. 1245.
Spinocellular, Lobulated, Epidermal Epithelioma of Traumatic Origin. R. Solé and D. Mosto.—p. 1246.
Spontaneous Rupture of Dermoid Cyst of Ovary. A. Althabe and G. di Paola.—p. 1250.
Necessity for League of Mental Hygiene in Argentina. G. Bosch and A. Mó.—p. 1252.
Indications for Autohemotherapy. E. C. Vivanco.—p. 1256.
Anesthesia with Tribromethanol. E. Nicholson and R. Caso.—p. 1265.
Scapula Alata Associated with Myopathy. E. Ruiz.—p. 1271.

Survey of Renal and Ureteral Lithiasis.—Salleras observed 135 cases of renal or ureteral lithiasis. The condition affected the kidney and the ureter at the same time in some patients and in others tuberculosis or pyonephrosis concurred. The lithiasis was unilateral in fifty-nine patients (twenty-seven on the right side and thirty-two on the left side) and bilateral in seventy-six patients (eight had stones and the remainder were at the stage of expulsion of gravel). The author resorted to medical treatment only (1) when there was abundant elimination of gravel and absence of stones;

(2) when the stones were small and hence could easily be expelled through the ureter; (3) in the presence of bilateral insufficiency of the kidneys, and (4) when the patient refused operation. The author considers surgery the best treatment of renal and ureteral lithiasis. The type of operation (nephrectomy, nephrolithotomy or pyelotomy) is determined according to the size, form, position and number of the stones, as shown in the roentgenograms. In cases of bilateral lithiasis the author advises the performance of the operation in two stages with an interval of a month between. The operation of bilateral lithiasis in one stage may necessitate a secondary nephrectomy. Of the entire group of the author's patients, sixty-one were cured, forty-two were improved, twenty-four remained in the same condition and eight died. The principal cause of mortality, as the immediate result of the operation, continues to be the secretory anuria, especially when nephrolithotomy is performed. Of the author's patients, those who had undergone an operation did not have recurrences. In all patients the proper diet was made compulsory.

Deutsche Zeitschrift für Chirurgie, Leipzig

221: 145-288 (Nov.) 1929

Diagnostic Value of Roentgen Examination in Kidney Tuberculosis. H. J. Lauber and W. Pohle.—p. 145.
Etiology and Treatment of Large Paranephric Hemorrhages. Tschmarke. —p. 163.
Results of Surgical Treatment of Exophthalmic Goiter. H. Hueck.—p. 171.
Surgical Treatment of Bronchiectasis. W. Denk.—p. 186.
Cysts of Spleen. W. Pohle.—p. 211.
Gastrocolic Jejunal Fistula Following Gastro-Enterostomy. P. Kotzoglu. —p. 223.
Treatment of Perforated Gastric and Duodenal Ulcers, End-Results of Palliative Surgical Procedures. H. Dworzak.—p. 252.
Infection with Bacillus of Buday. K. von Gusnar and H. Globig.—p. 263.
Diastase Content of Blood After Resection of Stomach. H. L. Popper. —p. 273.
Appendicitis Caused by Foreign Bodies. G. Schöneberg.—p. 278.
Agenesis of Gallbladder. E. Brack.—p. 283.

Diagnostic Value of Roentgen Examination in Kidney Tuberculosis.—Lauber and Pohle stress the fact that neither pyelography nor roentgen examination, nor both, can ever replace a carefully made clinical examination in cases of kidney tuberculosis, although they admit that in surgery both methods are indispensable. Pyelography and pneumopyelography may disclose early cases of the ulcerous form of the disease, and pneumoradiography may prove a valuable diagnostic aid in cases with cavity formation and in advanced cases with perinephric and paranephric changes, especially when there is considerable thickening of the capsule.

Massive Paranephric Hemorrhages.—Tschmarke compares the results of immediate or early and of late or remote operations in cases of massive hemorrhage into the bed of the kidney. There were twenty-seven cases in the first group. Thirteen patients were cured and fourteen died, a mortality of 52 per cent. Of eleven patients in the second group, ten were cured and one died, a mortality of 9 per cent. Hence, he concludes that even in the acute cases, with urgent symptoms, conservative treatment with late operation is justified. He cites a case of extensive hemorrhage into the kidney bed caused by a metastasis of a carcinoma of the bronchus in which the operation was successful in that the patient survived the effects of operation but succumbed to a progressing pneumonia two days afterward.

Surgical Treatment of Exophthalmic Goiter.—Hueck regards operation as the best form of treatment for all moderately severe and severe cases of exophthalmic goiter. Preoperative treatment with compound solution of iodine has been found to be wholly satisfactory in his experience. Metabolism estimations give a good picture of the results of such medication and of operation.

Surgical Treatment of Bronchiectasis.—Failure of internal treatment or medication in cases of bronchiectasis in children, Denk says, should call for the establishment of an artificial pneumothorax. In early cases of basal bronchiectasis, phrenicotomy may prove to be of value in that it will check hemorrhages. In other cases not much is to be expected of this procedure. Thoracoplasty is of value only in early cases and when there is much shrinkage of tissue. On the whole, however, this operation is not a dependable one and is far more dangerous to life. Pneumotomy must be regarded as being only a palliative operation in the acute exacerbations of a chronic bronchiectasis. In strong young subjects, lobectomy gives the best results. In older, weak subjects, or when it is not possible to separate the diseased lung, transverse resection (amputation), according to the method of Brauer, or a gradual destruction of the lung involved, with opening of the bronchiectatic cavities, is recommended.

Treatment of Perforated Gastric and Duodenal Ulcers.—Dworzak is of the opinion that the incidence of such perforation is increasing. The time of perforation is not always determinable because cessation of pain does not occur in every case. Primary resection in acute perforations is indicated only in early cases. He does not advise adopting this procedure as a routine method of treatment. If a primary resection is not done for a perforated gastric ulcer, he advises suture; in cases of duodenal and pyloric ulcer, gastro-enterostomy with suture of the ulcer. In cases of perforated duodenal ulcer, when the opening is small and there is much fibrinous exudate with adhesions, suture may be omitted, especially when there is present considerable distention of the intestinal loops and a debilitated patient, who reacts badly to the anesthetic, which increases the difficulty of finding the perforation. In cases in which a seeming cure has resulted from palliative treatment the patients should be subjected to a careful roentgen examination, and if the ulcer has not healed after several months, or if there is a suspicion of the presence of a peptic jejunal ulcer, a secondary radical resection should be done. The proportion of patients who recovered following perforation, including those in an inoperable state, namely, 64.7 per cent, have the prospect of remaining alive. In the author's experience, 94.5 per cent of patients operated on for a nonperforated ulcer have lived. He regards this as a strong argument for prophylactic operation in all cases in which roentgen examination shows the presence of ulcer, without waiting for further developments, such as perforation and a fatal peritonitis.

Infection with Bacillus of Buday.—Von Gusnar and Globig relate the case of a man, aged 51, who was struck by an automobile and was thrown down, landing on his face on the curbstone. He sustained a slight superficial injury of the bridge of the nose. Three days afterward the nose was considerably swollen, red and inflamed, and the patient's temperature had risen quite high. A seropurulent secretion was oozing from the wound. The wound was opened with forceps and a small abscess was evacuated. Soon afterward the temperature fell to almost normal. Four days later it rose again rapidly, but without any considerable change for the worse in the wound area, except for the appearance of a small piece of bone, which was extracted. An intermittently rising and falling temperature curve was the only symptom thereafter. The patient felt quite well. Involvement of the nasal accessory sinuses was definitely ruled out. There was no evidence of malaria. Quinine did not affect the temperature. A slight dulness in the chest led to pleural puncture. A few cubic centimeters of a clear yellow fluid was evacuated. Many leukocytes were found but no bacteria. Roentgen examination disclosed an apical tuberculosis. Suddenly the temperature rose to 40 C. (104 F.); the patient felt quite ill and complained of pains in the right thigh, throughout the whole abdomen, especially, however, over the liver, and in the right shoulder joint. There was considerable meteorism and pain on pressure. The spleen was not enlarged. A blood culture remained sterile. The leukocytes numbered 12,400. Increasing dulness in the chest demanded another pleural puncture and now 400 cc. of a slimy turbid fluid of queer odor was evacuated. Bacteriologic examination disclosed the bacillus of Buday, which was readily cultivated. The wound of the nose had healed completely by now, but the condition of the patient became rapidly worse. Another pleural puncture failed to relieve the symptoms. The heart action became worse and the patient died, about four weeks after he had been injured. The authors emphasize the fact that this is a typical history of infection with Buday's bacillus and suggest that these infections are far more common than one would be led to believe from

the scarcity of reports in the literature. In fact, thus far most of the few reports made have emanated from Hungary, but they are convinced that careful search will disclose a great number of cases and in all parts of the world.

Foreign Body Appendicitis.—Schöneberg searched the histories of nearly 2,000 patients with appendicitis subjected to operation and found that in 14 per cent of these foreign bodies were found in the appendix. In 60 per cent of the cases fecoliths were found; *Oxyuris* was present in 24 per cent. Seeds were found in very few cases, about 7 per cent. Foreign bodies were present in 25 per cent of gangrenous perforated appendixes; in 12 per cent of gangrenous nonperforated appendixes, and in 9 per cent of the simple and chronic cases of appendicitis. Bacteriologic examinations were made in forty-five of these foreign body cases. In forty cases pus-producing pathogenic organisms were found. The ordinary intestinal bacteria were found in only three cases. The pneumococcus was present in twenty-five cases; the streptococcus in seventeen cases; the staphylococcus in seven cases; the diphtheria bacillus in thirteen cases; gram-negative diplococci in fifteen cases, and the Plaut-Vincent spirochete in six cases. The author does not regard foreign bodies as being in any way an etiologic factor in appendicitis, although they may predispose to inflammation like any mechanical change. In 319 severe cases of appendicitis a foreign body was found in only eighty-one.

Münchener medizinische Wochenschrift, Munich

76: 1999-2038 (Nov. 29) 1929

New Nerve Phenomena Revealed by Diagnostic Nerve Stretching. K. Bragard.—p. 1999.
Experiences with Parasacral Anesthesia (Braun) in Operations on Pelvis. F. Burgkhardt.—p. 2003.
Effect of Bodily Condition on Duration of Gonorrhea. J. K. Mayr.—p. 2005.
*Relation Between Cancer and Blood Pressure. P. Feldweg.—p. 2005.
Localization of Tumors and Other Processes in Brain: Distant Symptoms as Cause of Incorrect Diagnosis. H. Frank.—p. 2007.
Value of Milk Ointments in Skin Diseases. L. Rehn.—p. 2010.
Indications for Treatment of Phimosis in Infants. K. Ochsenius.—p. 2011.
Neurotic Contracture of Temporomaxillary Articulation Following Peritonsillar Abscess. L. Forschner.—p. 2012.
*Complete Xerostomia: Case. L. Haltrich.—p. 2013.
Device for Fixation of Indwelling Catheter. P. Freund.—p. 2014.
History of Use of Manikin in Teaching Obstetrics. M. Vogel.—p. 2015.
Coca Chewing Among South Americans. Merzbacher.—p. 2016.

Relation Between Cancer and Blood Pressure.—Feldweg determined the blood pressure in women with cancer of the uterus, the vagina and the vulva. Tests were made on ninety-three patients before, during and after the treatment. The women were under observation from one to two years. The majority were treated with radium or with roentgen rays. Some were operated on and then the surgical treatment was followed by irradiation. The author gives tabular reports on the results of his tests. He asserts that the method of treatment had no influence on the blood pressure. However, he is convinced that the blood pressure curve indicates whether the treatment has been successful or whether the cancerous growth is still progressive. In patients with progressive carcinoma there was nearly always a gradual decline in the blood pressure, whereas in patients in whom the therapy had been successful, the blood pressure increased again. It may therefore be assumed that the blood pressure curve forecasts the outcome of the disease.

Complete Xerostomia: Case.—Haltrich observed complete xerostomia in a woman, aged 53. The anamnesis revealed that the tear secretion had stopped at the age of 40, and at the same time the patient had noticed a decrease in the secretion of saliva. Two years later complete xerostomia had developed. The examination revealed neither glandular swellings nor edema. The mucous membrane of the mouth was pale and dry and the patient had no teeth left. The gums were somewhat atrophied. No trace of saliva could be found; even the administration of pilocarpine did not stimulate its secretion. The patient could take solid foods only with some water and when she talked for some time, she likewise had to take water. She appeared prematurely old and somewhat undernourished, but the complete xerostomia was evidently a disease entity, because other disturbances could not be found.

Strahlentherapie, Berlin

34: 223-442 (Nov. 9) 1929

University of Berlin: New Institute for Research in Actinology. W. Friedrich.—p. 223.
Cytology and Histology of Tumors Following Multiple Roentgen Irradiations. P. Seulberger, W. Schmidt and F. Kröning.—p. 247.
*Histochemical Changes in Cancer Following Radium Irradiation. L. Schoenholz and H. Hirsch.—p. 273.
Action of Roentgen Irradiation on Metabolism. A. Jugenburg.—p. 288.
*Action of Roentgen Rays on Sympathetic Nervous System. P. Del Buono.—p. 301.
Dependence of Skin Tolerance Dose on Quality of Roentgen Rays. A. Reisner and T. C. Neeff.—p. 313.
Dosage of Hard Roentgen Rays from a Distance in Treatment of Cancer of Cervix Uteri. W. Fürst.—p. 340.
General and Local Treatment with Grenz Rays in Skin Diseases. G. Schulte.—p. 403.
Treatment of Skin Diseases with Grenz Rays. W. Gertz.—p. 406.
Mechanism of Roentgen Sensitization with Iodine Salts. D. L. Rubinstein.—p. 414.
Late Atrophy of Muscle Following Roentgen Irradiation. M. Hirschberg.—p. 421.
Erythema Action of Ultraviolet Incandescent Lamp. W. Vahle and A. Rüttenauer.—p. 425.
Eye Injuries in Ultraviolet Therapy. H. Bach.—p. 438.

Histochemical Changes in Cancer Following Radium Irradiation.—The study of Schoenholz and Hirsch on the histochemical changes in cancer following radium irradiation was carried out on cancers of the cervix uteri because of the ease with which biopsies can be performed on this organ. The authors noted a marked increase in the calcium content of carcinoma cells in ashed sections from tissue removed two days after radium irradiation; in sections from the same tissue that were stained in the customary manner changes were not present. From the study of the ash pictures the authors believe that the increase in the calcium content of the cancer cells was a result of the irradiation and occurred independently of the changes in the connective tissue substratum. The increased calcium content of the cancer cells following radium irradiation appeared to be the primary point of attack of the rays on the cancer cells. The authors emphasize that there is no evidence to support the contention that this change in the cancer cells is the result of an action on the connective tissue.

Action of Roentgen Rays on Sympathetic Nervous System.—Del Buono states that roentgen irradiation of any part of the body causes a characteristic disturbance in the equilibrium with preponderance of tonus in the vagus. The disturbance is produced by way of the skin fibers of the parasympathetic nervous system. The distant action on the suprarenal metabolism is manifested in the form of a definite and prolonged drop in the blood pressure. Irradiation of the hypophysis, on the contrary, increases the tonus of the hypophysis or by action on the interrenal centers produces a transient increase in the tonus of the sympathetic nervous system, manifested also by an increase in the blood pressure.

Wiener Archiv für innere Medizin, Vienna

19: 1-198 (Oct. 25) 1929

Changes in Circulation Time of Blood. H. Kahler.—p. 1.
*Action of Pus and Bacteria on Bile. H. Wit.—p. 39.
*Lymphatic Blood Picture in Cancer of Rectum. E. Silberstern and L. N. Pechterewa.—p. 47.
*Clinical Value of Xanthoproteic Reaction in Blood. K. Tschilow.—p. 67.
Evaluation and Origin of Consonating Râles in Lung. A. Kirch.—p. 77.
Diagnosis of Dynamics of Pulmonary Tuberculosis. A. Kirch.—p. 83.
Peptidase Determination in Diagnosis of Disorders of Liver. L. Böhmig.—p. 89.
Comparative Tests of Functioning of Liver. V. Weiss and L. Hollós.—p. 101.
Treatment of Hypervitaminosis D. J. A. Collazo, B. Varela and P. Rubino.—p. 137.
Brucella Abortus Infection in Man. G. Spengler.—p. 145.

Action of Pus and Bacteria on Bile.—Wit confirmed Gundermann's statement that when a mixture of pus and bile is kept for a time in an incubator the bilirubin disappears. He states that in purulent mixtures of pus and bile bilirubin may be converted into urobilinogen by the combined action of aerobes and certain obligate anaerobes. *Staphylococcus pyogenes-aureus* and *Bacillus coli* cause only slight decomposition of diluted bile. The action of pus and bacteria on bile is caused partly by ferments (oxydases), partly by the life activity of the bacteria

and partly by surface catalysis. The author believes that the decolorization of hydropic fluid in the gallbladder is caused not by the pus, as Gundermann contends, but by the increased permeability of the mucosa produced by the inflammation; in the decolorization process bilirubin is carried away in a purely physical manner.

Lymphatic Blood Picture in Cancer of Rectum.—Silberstern and Pechterewa report the occurrence of a lymphocytic blood picture in a man, aged 72, with cancer of the rectum. The total leukocyte count was 18,000. The differential count was as follows: polymorphonuclear neutrophils, 2,200 (12.2 per cent); eosinophils, 100 (0.5 per cent); monocytes, 400 (2.2 per cent), and lymphocytes, 15,400 (85.5 per cent). Most of the lymphocytes were small and contained only a little protoplasm in which there were a few azurophil granules. In many of the nuclei there was a dense network.

Clinical Value of Xanthoproteic Reaction in Blood.—According to Tschilow an increased xanthoprotein content of the serum does not prove that renal dysfunction is present. In the differential diagnosis of kidney diseases the xanthoproteic reaction is without significance and in the prognosis it should be used only with care. In the differentiation of renal from extrarenal forms of high blood pressure the reaction is without value. As an indicator of retention caused by renal insufficiency it is more sensitive than the rest nitrogen but frequently is less sensitive than the indican test.

Wiener klinische Wochenschrift, Vienna

42: 1557-1588 (Dec. 5) 1929

Nature of Malformations. G. B. Gruber.—p. 1557.
*Functioning of Stomach and of Pancreas Following Extensive Resection of Stomach. G. Stern.—p. 1560.
Significance of Symptom Described by Libman in Diagnosis of Angina Pectoris. M. Schugurowa.—p. 1563.
Nature of Rachitic Diseases of Bones. M. Schwamm.—p. 1565.
Predispositional Factors in Pathogenesis of Choreatic Diseases. R. Reynolds.—p. 1569.
Combating of Stenocardiac Disturbances Occurring Suddenly on the Street. M. Herz.—p. 1570.
Indications for Various Forms of Irradiation in Therapy of Skin Diseases. H. Fuhs.—p. 1571.
Causes of Backache. J. Hass.—p. 1572.
Optimal Dietary and Insulin Treatment for Children with Diabetes. R. Wagner.—p. 1573.

Functioning of Stomach and of Pancreas Following Extensive Resection of Stomach.—Stern reports the results of control examinations in 107 patients who had been operated on for ulcers of the stomach according to Billroth's first or second method. In many cases the chemical tests revealed a marked decrease in pepsin and lab (ferment of rennet). Anacidity was found in nearly all patients, both in those that had been operated on according to Billroth's first method and in those in whom resection had been done according to Billroth's second method. From this the author concludes that the anacidity does not depend on the method of operation but that it is the result of the extensive resection. It appears that by regurgitation of bile acids, trypsin digestion is activated in the stomach and compensates for the missing hydrochloric acid and pepsin. Neither the ferments of the pancreas nor the blood picture are affected by the resection. On the basis of his observations the author concludes that the digestive apparatus is capable of adjusting itself to the changed conditions that result from resection. The general condition of the patients as well as control roentgen examinations proved that resection of the stomach gives satisfactory results in most cases.

Zeitschrift für Kinderheilkunde, Berlin

48: 313-450 (Oct. 22) 1929

Scarlet Fever: Determination of Therapeutic Value of Antitoxic Serum. F. von Bormann.—p. 313.
Scarlet Fever as Toxicosis and Invasive Streptococcal Disease. A. Wolff-Eisner.—p. 344.
Persistence and Spread of Bacteria in Institution for Nurslings. R. Neumann and H. Happe.—p. 349.
Familial Epidermolysis Bullosa. H. Müller.—p. 359.
Epidemic of Influenza Vera in Pediatric Clinic of University of Halle. E. Barth and M. Hahn.—p. 366.
Whey Sugar Fever. J. Jochims.—p. 371.
Calcium Blanching Phenomenon in Scarlet Fever. H. Baar, H. Büff and L. Székély.—p. 384.
Protein Digestion in Intestine of Nurslings. O. Budde and E. Freudenberg.—p. 390.
Variations in Blood Ferments in Nurslings. M. W. Schabanowa-Miller.—p. 402.
Physiology of Water Metabolism in Nurslings. O. Bosch.—p. 412.
*Roentgen Determination of Size of Heart in Nurslings and Small Children. E. Voss.—p. 428.
*Resistance of Skin Capillaries in Rheumatic Conditions of Heart. I. Simon.—p. 437.
Calcium Content of Blood Serum in Hypervitaminosis D. J. Warkany and A. Wasitzky.—p. 442.

Roentgen Determination of Size of Heart in Nurslings and Small Children.—On the basis of a roentgen study of the size of the heart in 240 nurslings and small children aged less than 4 years, Voss states that for the determination of the size of the heart definite measurements are important and give a greater degree of certainty than estimations or the exclusive use of heart-lung quotients (Groedel). The most reliable measurements are the transverse dimension and the length; the other heart measurements (width, surface and volume) are too uncertain. The size of the heart is more dependent on the length of the body and the body weight than on the age and the circumference of the chest. The transverse dimension and the length of the heart increase more rapidly in nurslings than in older children. The near exposure (Groedel) can be used until the end of the fourth year of life. The determination of the size of the heart roentgenologically in infants and small children is of great importance because the figures obtained on percussion are irregular and because there is no necessity for far exposures of the heart.

Resistance of Skin Capillaries in Rheumatic Conditions of Heart.—Simon compared the resistance of the skin capillaries in twenty children without heart disease and in twenty children with rheumatic endocarditis and found that decreased resistance of the capillaries was less frequent in the normal children than in the children with endocarditis. In chronic recurrent and septic forms the resistance of the skin capillaries was often markedly decreased.

Zeitschrift für klinische Medizin, Berlin

111: 303-600 (Oct. 5) 1929

*Laparoscopy. H. Kalk.—p. 303.
Blood Pressure Determinations in Acute Infectious Diseases. G. Enke.—p. 349.
Decreased Minute Volume of Output of Heart in Adiposity. G. Groscurth.—p. 357.
Change in Size of Heart in Various Kinds of Sport. H. Herxheimer.—p. 376.
Rôle of Spleen in Water Metabolism. K. Dresel and Z. Leitner.—p. 394.
Urea Concentration Test (MacLean and de Wesselow). H. Steinitz.—p. 420.
Relations Between Blood and Edema Fluids and Effusions in Serous Cavities. F. Reiche.—p. 454.
Time Relation of Excretion of Organic Acids in Urine. A. Joffe, F. Mainzer and E. Scherer.—p. 464.
Pathogenesis of Paroxysmal Hemoglobinuria. E. Risak.—p. 472.
*Panmyelophthisis. H. Brugsch.—p. 485.
Relations Between Blood Sugar Level and Excretion of Sugar. F. Peiser.—p. 499.
Influence of Sympathetic Nervous System on Variations in Blood Sugar Level. O. Klein and J. Heinemann.—p. 527.
Neurogenic Sighing Respiration in Angina Pectoris. S. Wassermann.—p. 539.
Parallelism Between Schilling-Arneth Blood Picture and Sedimentation Speed of Erythrocytes. L. von Varga.—p. 551.
Lactic Acid Content of Blood in Various Diseases. E. M. Gelstein and M. I. Frankstein.—p. 563.
Tuberculous Hepatitis. T. Hausmann.—p. 582.

Indications and New Instrument for Laparoscopy.—Kalk states that although laparoscopy (endoscopic examination of the interior of the abdomen) was used by Jacobaeus seventeen years ago it is still an almost unknown method. He believes that its unpopularity is to be explained on the basis of its apparent dangers, the difficulty of orientation in the interior of the abdomen and the lack of a satisfactory instrument. During his four years' experience with laparoscopy he has devised a laparoscope that he believes corrects the undesirable features of other laparoscopes. His instrument consists of three parts, namely, an improved trocar that simplifies the penetration of the abdominal wall, a lamp carrier and a direct optical system that facilitates the orientation in the abdominal cavity. He believes that laparoscopy is indicated only in cases in which a diagnosis cannot be made from the clinical and roentgen examinations and in which additional information may be expected from the use of the laparoscope. The procedure is

contraindicated in acute and in localized encapsulated inflammatory processes in the abdominal cavity and in marked cardiac decompensation.

Panmyelophthisis.—Brugsch reports four cases of panmyelophthisis (atrophy of the bone marrow). In one of the cases liver therapy was used for a long time but without success. The clinical picture conformed, on the whole, to the requirements specified by Frank. The anatomicopathologic changes in three of the cases, however, differed markedly from the changes described by Frank. Extensive hemosiderosis was found in nearly all the organs. The bone marrow showed a leukocytic reaction with a moderate degree of blood formation. The author believes that on the basis of these observations and numerous similar cases reported in the literature one should differentiate between completely aplastic (myelophthisic) anemias and anemias (myelotoxic) with lymphatic reactions and with leukocytic reactions.

Zentralblatt für Gynäkologie, Leipzig

53: 2577-2640 (Oct. 12) 1929

*Ovarian Functioning Following Extirpation of Uterus. A. Westman. —p. 2578.
Cervicoperineal Fistula as Birth Canal in Atresia of Vagina. P. Caffier. —p. 2582.
Treatment of Transverse Position by Cesarean Section. R. Remmelts. —p. 2587.
Use of Raspatory in Operative Gynecology. F. Ludwig.—p. 2588.
Fibroid Tumors of Uterus: Changes in Heart. J. Janáki.—p. 2589.
*Birth of Uterine Myoma During Puerperium. B. Herzfeld.—p. 2592.

Ovarian Functioning Following Extirpation of Uterus.—According to Westman complete extirpation of the uterus in immature mice (aged from 14 days to 3 weeks) did not produce disturbances in the functioning of the ovaries. In all the animals the ovaries showed the changes that accompany puberty, they produced regular cyclic changes in the mucosa of the vagina and even after a long period of observation they did not show pathologic changes.

Birth of Uterine Myoma During Puerperium.—Herzfeld reports a case of spontaneous birth of a uterine myoma (the size of a goose egg) twenty-nine days after a normal labor which had not been followed by excessive bleeding. The birth of the myoma was likewise not followed by uterine bleeding.

53: 2705-2768 (Oct. 26) 1929

Changes in Myometrium During Pregnancy. H. Stieve.—p. 2706.
Prolonged Pregnancy: Statistical Study. W. Zangemeister.—p. 2723.
*Leukocytes and Reticulocytes During Pregnancy. R. I. Feldmann and E. J. Jankelewitsch.—p. 2729.
*Diagnosis of Tuberculous Tumor of Uterine Adnexa. J. Wieloch.—p. 2737.
*Fecal Accumulations in Intestine with Symptoms Simulating Disease of Uterine Adnexa. S. Durlacher.—p. 2740.

Number of Leukocytes with Toxic Changes in Protoplasm and of Reticulocytes During Pregnancy.—Feldmann and Jankelewitsch state that in a study of the details of the structure of blood cells one should consider not only the nucleus but also the protoplasm because protoplasm reacts to infection and intoxication as much as the nucleus, and perhaps more. Contrary to intoxication and infection, which are characterized by a well developed toxic granulation of the neutrophils, the toxicoses of pregnancy do not produce marked changes in the protoplasm. Pregnancy modifies only slightly the erythropoietic activity of the bone marrow. The bleeding in labor stimulates the bone marrow to increased activity but less markedly than traumatic bleeding. In sepsis the number of such "toxischen" (toxic) leukocytes reaches its maximum and the number of reticulocytes its minimum. This indicates the power of the toxic process and the inhibition of the erythropoietic activity of the bone marrow. With the increase in the severity of the symptoms in the toxicoses of pregnancy, the number of reticulocytes decreases.

Diagnosis of Tuberculous Tumor of Uterine Adnexa.—Wieloch reports a case of tuberculous tumor of the uterine adnexa in which the diagnosis was confirmed by means of a vaginal puncture and guinea-pig inoculation.

Fecal Accumulations in Intestine with Symptoms Simulating Disease of Uterine Adnexa.—Durlacher reports the case of a woman who had had a continuous dull pain in the left hypogastrium and leukorrhea for six months. On digital examination a thick swelling of a doughy consistency was felt along the left uterine ligament. Between the palpating fingers the thickening was recognized as a soft easily indented and readily displaced mass. Strong cathartics were given for two days and bimanual examination was again performed; not a trace of the swelling or resistance was found. The pain disappeared and the leukorrhea was greatly decreased. The author emphasizes the importance of constipation in some forms of leukorrhea accompanied by headache, weakness, loss of appetite, incapacity for work and mental depression.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

73: 5445-5544 (Nov. 23) 1929

Perniosis. S. Mendes da Costa.—p. 5446.
Commensal Infection. J. J. van Loghem.—p. 5460.
Menstruation. G. C. Nijhoff.—p. 5468.
*Immunization Against Plague. W. Doorenbos.—p. 5472.
*Intramuscular Injections of Quinine in Septic Conditions. C. W. Bottema.—p. 5482.

Immunization Against Plague.—Doorenbos reports that in rats infected experimentally with plague, an acute intoxication is often observed, and that in such cases a distinct direct relationship is established between the severity and the extent of the pathologic changes in the body and the number of plague bacilli found in the organs. Also on the basis of further observations on the white rat and the guinea-pig, he thinks that this intoxication must be regarded as a symbiotic intoxication, which originates as a result of the combined action of the plague bacillus and pathogenic intestinal bacteria. For the development of this symbiotic intoxication it is not necessary that the plague bacillus be virulent in the sense that it can multiply rapidly in the body. Increased resistance toward the plague bacillus, such as results from vaccination with bacteriophage lysates, gives no protection against this acute plague intoxication and cannot, therefore, always be taken as identical with immunity to plague. Even if it may be assumed that by vaccination in this form greater resistance toward the plague bacillus results than is obtained by vaccination with plague vaccines prepared in other ways, the result of the vaccination will depend on whether or not the factors are present that control the development of these symbiotic intoxications. However, before the time will have arrived for undertaking new vaccination tests applied to man, a more exact study of the pathogenesis of the acute plague intoxication in man is necessary.

Intramuscular Injections of Quinine in Septic Conditions.—A patient with a carbuncle, complicated with lymphangitis, was admitted to Bottema's department in the Marine Hospital. He treated the patient conservatively with a suitable paste applied to the focus of infection and compresses to combat the lymphangitis. However, the general condition of the patient finally necessitated his transfer to the department of internal diseases, where he received intramuscularly injections of quinine. Bottema, recalling his experiences in the Dutch East Indies (Surabaya, Java), anticipated difficulties, and was not surprised when, at the site of the injection, a large abscess developed, which required operative treatment. Similar results had been observed previously in the East Indies by Bottema in cases of angina necrotica, furunculosis, abortion and typhoid. However, he never saw an abscess develop in patients with malaria following the administration of quinine.

Bibliotek for Læger, Copenhagen

121: 511-538 (Nov.) 1929

*Benign Lymphocytic Meningitis. K. H. Krabbe.—p. 511.
Investigations on Epinephrine Reaction and Clinical Application. A. Brems.—p. 532.

Benign Lymphocytic Meningitis.—Krabbe describes eleven cases of acute meningitis with lymphocytosis, with recovery. He thinks most of the cases were infections closely related to influenza and epidemic encephalitis. In several instances the picture was uncertain and only on lumbar puncture was a meningitis disclosed as the cause of the disorder, or, at least, as an essential factor in it. He warns against the diagnosis of tuberculous meningitis and against making a poor prognosis exclusively on the basis of a marked lymphocytosis in the spinal fluid.